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Continued on Third Cover Page

JOURNAL
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Volume 5 MARCH, 1930 Number 2

Report on Applications for Matriculation in Schools of Medicine of the United States and Canada, 1929-1930*

BURTON D. MYERS
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School of Medicine

Herewith we present the fourth annual report on applicants for matriculation in the schools of medicine of the United States and Canada. We present also a re-statement of the three preceding reports, all four being arranged on a sex distribution basis. It will be noted that there are slight differences in these reports when compared with the annual reports of the past three years. These differences are due largely to inclusion in this report of supplementary statements sent in by certain schools after publication of the yearly report.

In order to make an easy comparison of the report of this year with those of the past three years, the following summary of essential features is made:

	1926-27	1927-28	1928-29	1929-30
Number of applications	20,093	23,595	28,998	31,749
Number of applicants	10,006	11,287	12,420	13,655
No. applicants accepted	6,420	6,496	6,974	7,035
No. applicants refused	3,586	4,523	5,446	6,620
Disposition undesignated		268		

One of the outstanding features of these reports has been the increase in the number of students applying for matriculation in medical schools. We note that the increase in the number of applicants has been very nearly the same each year. The average increase each year over the preceding year has been 1,183, and the variation from this average is less than 100.

The increase this year in the number of applicants accepted is significant; it is, however, very interesting to note that the increase in

*Read at the Fortieth Annual Meeting held in New York City, Nov. 7-9, 1929. The cost of this study—as well as the preceding three studies—was met by the Commission on Medical Education.

the number refused has been at the average rate of a thousand a year, which, considering the slight increase in acceptances, checks very well with the increase in the number of applicants. The number of applicants per student is 2.01 for 1926-27; 2.09 for 1927-28; 2.33 for 1928-29, and 2.32 for 1929-30.

Since the report card for 1926-27 differed from that in use since that date in certain minor details, the tabulated report for 1926-27 as here presented has been re-cast into terms of the report card used since 1926-27, a copy of which follows:

APPLICANTS FOR FRESHMAN MEDICAL MATRICULATION 1929-1930

School of Medicine .....
(name)

Name of Applicant .....

Address of Applicant .....

I. Credentials satisfactory (quantitatively)
   1. Accepted, matriculating for first time.
   2. Accepted, repeating freshman year
   3. Refused because class full
   4. Refused because of personality or poor scholarship

II. Credentials examined and found inadequate (quantitatively)
   1. To meet requirement of THIS school
   2. To meet minimum requirement of A.A.M.C.

III. Credentials not seen or examined. Unofficial statements indicate
   1. Probably satisfactory (quantitatively) to meet minimum requirements of A.A.M.C.
   2. Probably *not* satisfactory to meet minimum requirements of A.A.M.C.

Note—The above makes no provision for record of inquiries, requests for catalog, blanks, etc., from merely prospective applicants.

As stated above, the tables here presented are arranged on a sex distribution basis. Take the College of Medical Evangelists, Table I, (1926-27) for illustration. They accepted 116 students, of whom ten were women and 106 men. Of these, seven were repeating the freshman year, one woman and six men. Twenty-eight were refused because the class was full, three women and 25 men. They had a total of 215 applications, 20 women and 195 men.

Let us examine the report for 1929-30, Table IV. The key to the roman and arabic numerals heading Tables I, II, III, and IV is found in the application card.

TABLE I. (1926-27)

SCHOOL	I. 1	I. 2	I. 3	I. 4	II. 1	II. 2	III. 1	III. 2	Mis.	Totals
Alabama	1	..	..	..	.....	.....	.....	.....	.....	1
	42	10	..	..	.....	.....	.....	.....	95	147
Med. Evangelists	10	1	3	..	4	2	.....	.....	.....	20
	106	6	25	14	39	4	.....	.....	1	195
Leland Stanford	7	..	2	..	.....	.....	.....	.....	1	10
	54	..	39	3	.....	.....	.....	.....	.....	96
California	..	..	..	4	..	3	.....	.....	.....	7
	60*	..	3	22	..	21	.....	.....	1	107
Colorado	4	..	..	2	.....	.....	.....	.....	1	7
	51	3	31	40	9	..	.....	.....	4	138
Yale	5	..	..	7	.....	.....	.....	.....	.....	12
	55	..	..	177	.....	.....	.....	.....	21	253
Georgetown	.....	.....	.....	.....	.....	.....	.....	.....	.....	0
	116*	5*	..	..	.....	.....	.....	.....	287*	408*
Geo. Washington	4	..	..	..	..	2	.....	.....	.....	6
	80	2	101	34	1	10	.....	.....	.....	228
Emory	.....	.....	.....	.....	.....	.....	.....	.....	.....	0
	62	5	9	38	.....	.....	.....	.....	2	116
Georgia	.....	.....	.....	.....	.....	.....	.....	.....	.....	0
	36*	..	..	..	.....	.....	.....	.....	62*	98*
Northwestern	.....	.....	.....	.....	.....	.....	.....	.....	.....	0
	135*	..	..	..	.....	.....	.....	.....	1065*	1200*
U. of Chicago	14	..	9	1	.....	.....	.....	.....	.....	24
	128	..	59	21	3	4	.....	.....	1	216
Illinois	8	..	..	..	.....	.....	.....	.....	.....	8
	52	..	..	..	.....	.....	.....	.....	1	53
	160*	..	..	..	.....	.....	.....	.....	130*	290*
Indiana	2	..	2	1	3	1	.....	.....	.....	9
	119	3	82	63	6	19	.....	.....	.....	292
Iowa	8	1	3	..	..	3	.....	.....	.....	15
	130	9	49	9	2	21	.....	.....	.....	220
Kansas	6	..	..	..	.....	.....	.....	.....	.....	6
	101	3	32	55	1	19	.....	.....	1	212
Louisville	4	..	..	1	.....	.....	.....	.....	.....	5
	97	7	71	94	4	4	.....	.....	.....	277
Tulane	7	..	2	1	..	3	.....	.....	.....	13
	142	6	108	46	..	94	.....	.....	.....	396
Johns Hopkins	8	..	4	20	.....	.....	.....	.....	1	33
	69	..	137	14	3	..	.....	.....	12	235
Maryland	.....	.....	.....	.....	.....	.....	.....	.....	.....	0
	247*	..	..	..	.....	.....	.....	.....	272*	519*
Boston	5	1	2	5	..	1	.....	.....	1	15
	53	..	53	153	11	6	.....	.....	43	319
Harvard	.....	.....	.....	.....	.....	.....	.....	.....	.....	0
	124	1	77	236	1	11	.....	.....	6	456

TABLE I. (1926-27)—Continued

SCHOOL	I. 1	2	3	4	II. 1	2	III. 1	2	Mis.	Totals
Tufts	13	..	1	7	..	3				24
	169	3	65	234	3	55			56	585
Michigan	11	..	12	5	..	5			1	34
	199	..	252	128	..	72			9	660
Minnesota	4	..	2	..	..	4				10
	50	1	15	16	..	76			17	175
Mississippi	1	..	1	..						2
	36	..	90	8	3	18			3	158
Missouri	1	..	1	..						2
	40	2	49	9	6	6				112
St. Louis U										0
	257	15	30	129	..	34				465
Washington	2	..	5	..	..	1				8
	94	2	134	124	5	11				370
Creighton										0
	60	3	59	40	..	14			11	187
Nebraska	5	..	2	..	..	2			1	10
	88	6	74	13	2	26			20	229
Dartmouth										0
	18	3	25	38	1	19			1	105
Albany	3	..	..	..					2	5
	26	6	..	..					82	114
Buffalo	3	..	9	5	1	1				19
	70	4	366	63	1	20			3	527
Columbia										0
	131*	..	..	..					389*	520*
Cornell	6	..	14	3	..	5				28
	65	..	104	17	..	48			34	268
Long Island	3	..	..	5	..	4			3	15
	139	1	101	234	..	82			26	583
New York Homeo	3	..	..	..						3
	86	7	..	..					293	386
N. Y. University	7	..	5	1	..	5			1	19
	132	..	86	167	..	25			100	510
Rochester	3	..	..	..					7	10
	31	..	..	..					87	118
Syracuse	5	..	5	..						10
	56	1	80	10	..	1				148
N. Carolina	3	..	3	1	..	1				8
	43	..	126	5	..	27			1	202
N. Dakota	2	..	2	..						4
	46	..	35	1	..	7			41	130
Cincinnati	8	..	7	..	..	1				16
	44	..	148	12	1	14				219
Western Reserve	7	..	1	1						9
	84	1	6	124	6	13				235

TABLE I. (1926-27)—Continued

SCHOOL	I. 1	2	3	4	II. 1	2	III. 1	2	Mis.	Totals
Ohio State	6	..	..	1	.....	.....	.....		.....	7
	90	2	2	32	3	9	.....		.....	138
Oklahoma	4	..	..	1	.....	.....	.....		.....	5
	49	3	6	16	..	1	.....		.....	75
Oregon	7	..	1	..	.....	.....	.....		1	9
	63	..	13	13	..	5	.....		1	95
Hahnemann	.....				.....	.....	.....		.....	0
	.....				.....	.....	.....		63	63
Jefferson	.....				..	1	.....		.....	1
	221	..	7	242	61	227	.....		44	802
Temple	1	..	2	1	..	1	.....		.....	5
	76	..	194	81	1	16	.....		5	373
Pennsylvania	4	1	18	..	..	11	.....		3	37
	131	..	465	18	2	129	.....		15	760
Woman's Medical	29	..	..	1	15	22	.....		33	100
Pittsburgh	4	..	3	1	..	1	.....		.....	0
	61	..	151	41	1	16	.....		.....	270
S. Carolina	2	..	1	..	..	2	.....		.....	5
	36	6	121	18	..	22	.....		.....	203
S. Dakota	..	..	..	1	.....	.....	.....		.....	1
	28	3	16	20	..	8	.....		.....	75
Tennessee	4	..	..	..	.....	.....	.....		.....	4
	138	..	..	..	.....	.....	.....		207*	345
Meharry	.....				.....	.....	.....		.....	.....
	.....				.....	.....	.....		.....	.....
Vanderbilt	4	..	..	..	.....	.....	.....		.....	4
	41	..	..	..	.....	.....	.....		103*	144
Baylor	7	..	..	..	.....	.....	.....		.....	7
	127	18	14	17	..	12	.....		.....	188
Texas	5	..	..	..	..	1	.....		.....	6
	63	..	..	18	..	10	.....		11	102
Utah	.....				.....	.....	.....		.....	0
	28*	..	..	..	.....	.....	.....		.....	28*
Vermont	2	..	4	..	.....	.....	.....		.....	6
	34	1	159	1	.....	.....	.....		1	196
Med. Col. Va	.....				.....	.....	.....		.....	0
	66*	..	..	..	.....	.....	.....		309*	375*
Virginia	2	..	3	..	.....	.....	.....		.....	5
	64	..	191	34	3	4	.....		.....	296
West Virginia	.....				.....	.....	.....		.....	0
	80*	..	..	..	.....	.....	.....		560*	640*
Wisconsin	7	1	..	1	..	1	.....		.....	10
	117	8	20	76	1	23	.....		2	247
Marquette	4	..	..	2	.....	.....	.....		.....	6
	116	..	4	39	7	..	.....		.....	166

TABLE I. (1926-27)—Continued

SCHOOL	I. 1	2	3	4	II. 1	2	III. 1	2	Mis.	Totals
Alberta	1	..	..	..	.....	.....	.....	.....	.....	1
	21	..	4	..	.....	.....	.....	.....	3	28
Dalhousie	.....	.....	.....	.....	.....	.....	.....	.....	.....	0
	29	..	1	..	.....	.....	.....	.....	.....	30
Queen's	.....	.....	.....	.....	.....	.....	.....	.....	.....	0
	..	..	26	..	.....	.....	.....	.....	.....	26
Toronto	16	..	1	1	..	1	.....	.....	.....	19
	119	3	10	5	..	46	.....	.....	.....	183
Western Ontario	1	..	..	..	.....	.....	.....	.....	.....	1
	36	..	..	..	..	1	.....	.....	.....	37
	26*	..	..	..	.....	.....	.....	.....	.....	26*
McGill	3	1	1	2	.....	.....	.....	.....	.....	7
	120	7	145	143	..	5	.....	.....	2	422
Montreal	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Laval	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Manitoba	2	..	..	..	.....	.....	.....	.....	.....	2
	60	7	15	..	..	13	.....	.....	.....	95
TOTALS										
Women	298	6	131	82	23	88	.....		56	684
Men	6223	173	4285	3205	187	1328	.....		4504	19905
GRAND TOTALS	6521	179	4416	3287	210	1416	.....		4560	20589*

*The difference of 496 between this number and that given in the summary represents cards which arrived too late to appear in the original report.

TABLE II. (1927-28)

SCHOOL	I. 1	2	3	4	II. 1	2	III. 1	2	Uncl.	Totals
Alabama	.....	.....	.....	.....	.....	.....	.....	.....	.....	0
	51	..	4	81	52	..	13	4	1	206
Arkansas	..	..	1	..	2	..	.....	.....	.....	3
	29	8	7	30	27	6	..	5	14	126
Med. Evangelists	8	..	5	..	2	..	4	..	.....	19
	105	11	39	..	10	..	9	..	.....	174
Stanford	3	..	..	..	.....	.....	.....	.....	.....	3
	57	..	8	25	10	..	..	1	.....	101
Southern Calif	1	..	..	..	..	3	1	2	.....	7
	36	5	90	18	6	36	73	22	3	289
California	8	..	3	5	2	..	.....	.....	.....	18
	52	..	5	45	22	..	.....	.....	24	148

TABLE II. (1927-28)—Continued

SCHOOL	I.				II.		III.		Uncl.	Totals
	1	2	3	4	1	2	1	2		
Colorado	2	..	2	..	1	..	.....		1	6
	66	2	24	4	17	4	.....		38	151
Yale	5	1	1	13	.....		1	..	4	25
	48	4	4	261	1	..	..	1	62	381
Georgetown	.....				.....		1	..	.....	1
	134	6	32	55	61	18	152	1	20	479
Geo. Washington	6	1	..	..	.....		.....		.....	7
	75	1	104	30	20	7	.....		7	244
Howard	3	..	2	..	1	..	1	..	.....	7
	63	1	46	..	20	..	15	4	.....	149
Emory	1	..	..	..	.....		.....		.....	1
	54	3	7	96	8	4	1	2	20	195
Georgia	1	..	1	..	.....		.....		.....	2
	28	5	94	..	5	..	.....		2	134
Chicago Medical	3	3	..	..	.....		.....		.....	6
	53	6	..	..	11	..	3	2	.....	75
Loyola	4	..	1	..	.....		.....		.....	5
	124	10	45	67	1	..	.....		16	263
Northwestern	4	..	9	10	.....		.....		.....	23
	113	6	265	304	46	2	26	9	188	959
U. of Chicago	8	..	5	5	.....		.....		1	19
	106	1	63	25	2	..	.....		26	223
Illinois	7	..	3	..	.....		.....		.....	10
	147	9	52	3	13	..	.....		23	247
Indiana	5	..	..	5	2	..	1	..	.....	13
	107	2	32	115	32	..	28	129	.....	445
Iowa	5	..	1	..	.....		.....		.....	6
	155	6	61	3	20	3	5	..	16	269
Kansas	..	..	2	1	.....		.....		2	5
	85	..	96	35	1	8	13	..	.....	238
Louisville	2	..	..	..	.....		.....		.....	2
	118	1	155	24	8	..	.....		.....	306
Tulane	6	..	5	1	5	..	.....		.....	17
	155	2	128	72	326	..	.....		.....	683
Johns Hopkins	8	..	5	11	..	1	.....		.....	25
	44	..	67	87	6	..	.....		.....	204
Maryland	5	1	5	..	.....		.....		.....	11
	143	15	209	183	1	13	38	2	89	693
Boston	4	..	2	6	.....		1	..	.....	13
	53	2	153	267	7	3	31	1	59	576
Harvard	.....				.....		.....		.....	0
	125	..	123	127	11	3	79	..	.....	468
Tufts	12	..	..	8	..	1	1	..	.....	22
	196	1	35	395	..	27	65	1	28	748
Michigan	12	..	1	1	5	..	..	2	.....	21
	233	..	173	7	272	..	..	24	.....	709

TABLE II. (1927-28)—Continued

SCHOOL	I.				II.		III.		Uncl.	Totals
	1	2	3	4	1	2	1	2		
Detroit	3	..	..	..	1	..	.....		.....	4
	92	..	39	11	20	..	15	1	.....	178
Minnesota	6	..	..	..	4	..	.....		.....	10
	94	1	1	12	127	..	..	36	6	277
Mississippi	1	..	..	1	.....		1	1	.....	4
	32	..	7	27	24	4	25	10	.....	129
Missouri	1	..	..	1	.....		.....		.....	2
	50	1	3	38	5	15	..	2	.....	114
Saint Louis	1	..	..	1	2	..	.....		.....	4
	249	28	91	168	23	37	..	4	.....	600
Washington	3	..	..	3	.....		1	1	.....	8
	83	6	11	98	17	12	26	2	.....	255
Creighton	2	..	..	1	.....		1	1	.....	5
	59	..	61	20	9	..	4	14	14	181
Nebraska	2	..	2	..	.....		.....		.....	4
	79	5	104	17	18	7	4	..	44	278
Dartmouth	.....				.....		.....		.....	0
	27	4	7	52	7	19	1	9	.....	126
Albany	1	..	..	..	.....		.....		1	2
	40	..	31	13	14	..	10	2	92	202
Buffalo	1	..	1	3	1	..	5	..	.....	11
	84	1	123	95	10	..	350	5	.....	668
Columbia	7	..	14	4	7	..	.....		.....	32
	155	1	131	82	152	..	.....		28	549
Cornell	6	..	17	3	6	..	4	..	.....	36
	43	..	170	54	23	..	21	4	39	354
Long Island	5	1	3	10	.....		2	..	.....	21
	216	8	76	371	6	..	22	5	65	769
New York Homeo.	3	..	8	..	.....		.....		.....	11
	107	..	238	..	.....		.....		16	361
New York Univ.	5	..	7	6	5	1	2	..	.....	26
	197	2	118	204	71	1	25	..	.....	618
Rochester	3	..	..	6	.....		.....		1	10
	25	..	5	141	.....		1	..	11	183
Syracuse	3	..	2	..	.....		1	..	.....	6
	45	3	216	51	10	1	1	..	8	335
North Carolina	1	..	..	..	1	..	.....		.....	2
	44	..	16	24	14	5	1	..	12	116
North Dakota	1	..	..	..	.....		.....		.....	1
	28	..	15	..	5	3	.....		7	58
Cincinnati	2	..	1	..	3	..	.....		.....	6
	78	4	35	39	23	..	.....		.....	179
Western Reserve	6	..	1	5	.....		1	..	.....	13
	88	2	22	140	43	..	69	3	8	375
Ohio State	6	..	..	..	.....		.....		.....	6
	94	..	1	24	8	7	.....		34	168

TABLE II. (1927-28)—Continued

SCHOOL	I.				II.		III.		Uncl.	Totals
	1	2	3	4	1	2	1	2		
Oklahoma	3	..	1	..	.....		.....		.....	4
	51	2	19	41	14	..	8	5	.....	140
Oregon	5	..	3	..	1	..	.....		.....	9
	65	..	32	4	13	2	.....		1	117
Hahnemann	..	..	1	..	.....		.....		.....	1
	115	12	257	..	.....		..	2	1	387
Jefferson	.....				1	..	.....		.....	1
	235	..	117	207	358	..	.....		18	935
Temple	1	..	1	2	..	1	.....		.....	5
	62	1	..	177	7	20	15	15	86	383
Pennsylvania	5	..	13	2	3	4	1	2	.....	30
	105	1	412	28	94	39	60	44	23	806
Woman's Medical	42	1	..	3	22	..	7	1	2	78
	.....				.....		.....		.....	0
Pittsburgh	3	..	6	..	..	1	.....		.....	10
	75	1	153	3	..	1	6	..	1	240
S. Carolina	1	..	..	..	..	3	1	2	.....	7
	36	5	90	18	6	36	73	22	3	289
S. Dakota	..	..	1	..	.....		.....		.....	1
	28	..	9	26	6	1	.....		1	71
Tennessee	1	..	3	1	.....		.....		.....	5
	129	1	177	57	20	1	.....		.....	385
Meharry	1	..	..	..	.....		.....		.....	1
	57	8	61	..	24	..	.....		.....	150
Vanderbilt	4	..	..	3	.....		.....		.....	7
	79	..	..	81	34	10	.....		.....	204
Baylor	4	..	..	..	.....		.....		.....	4
	99	9	11	7	2	..	.....		3	131
Texas	6	..	..	..	1	..	.....		.....	7
	87	5	50	1	6	..	.....		2	151
Utah	1	..	1	..	.....		.....		.....	2
	30	..	32	7	13	..	19	..	1	102
Vermont	2	..	..	..	.....		1	..	.....	3
	37	..	33	3	2	2	141	17	13	248
Med. Coll. Va	1	..	3	..	..	3	.....		.....	7
	119	4	104	65	..	14	.....		.....	306
Virginia	4	..	1	1	..	1	1	..	.....	8
	66	1	62	92	7	7	27	5	.....	267
West Virginia	2	..	1	..	.....		.....		.....	3
	60	..	104	..	3	..	.....		7	174
Wisconsin	10	..	5	..	.....		1	..	.....	16
	106	6	31	..	38	..	1	..	.....	182
Marquette	2	..	..	2	.....		.....		.....	4
	125	..	45	41	.....		.....		.....	211
Alberta	.....				.....		.....		.....	0
	14	..	11	..	2	..	..	1	.....	28

TABLE II. (1927-28)—Continued

SCHOOL	I. 1	2	3	4	II. 1	2	III. 1	2	Uncl.	Totals
Dalhousie					4	..				4
	46	3	11	1	58	..	1	1		121
Queen's										
Toronto	10	2	1	..	1	..				14
	103	12	10	1	26	..			2	154
Western Ontario	4	..	..	..	2	..				6
	38	1	10	4	2	..				55
McGill	5	..	5	1	1	..	2	..		14
	126	..	85	87	51	10	62	6	1	428
Montreal										0
	42	3	..	..						45
Laval										0
	2	..	..	..			6	1	2	11
Manitoba										
TOTALS										
Women	308	10	156	125	86	16	42	10	12	765
Men	6865	243	5478	4973	2425	348	1472	402	1182	23388
GRAND TOTALS	7173	253	5634	5098	2511	364	1514	412	1194	24153

Duplicate cards 558

Total number of cards on file for 1927-28 23,595

TABLE III. (1928-29)

SCHOOL	I. 1	2	3	4	II. 1	2	III. 1	2	Totals
Alabama									
Arkansas	1	..	..	..					1
	51	7	2	13	14	1			88
Med. Evangelists	10	1	4	..	2	..			17
	110	15	31	3	17	..			176
Stanford	2	..	1	..					3
	60	1	32	26	4	..	1	..	124
Southern Calif	5	1	..	..					6
	46	1	..	..					47
California	11	..	..	6	5	..			22
	74	..	..	35	23	..	7	..	139
Colorado	3	..	..	1					4
	53	3	..	14	11	..	28	2	111

TABLE III. (1928-29)—Continued

SCHOOL	I.				II.		III.		Totals
	1	2	3	4	1	2	1	2	
Yale	5	..	1	15	.....		.....		21
	72	..	3	236	2	..	20	2	335
Georgetown	2	..	..	..	1	..	1	..	4
	162	10	9	161	441	33	47	3	866
Geo. Washington	2	..	1	..	.....		.....		3
	86	1	198	32	13	14	.....		344
Howard	2	..	1	..	.....		3	1	7
	70	..	51	2	1	42	41	20	227
Emory	.....		.....		.....		1	..	1
	72	2	11	124	1	4	35	1	250
Georgia	1	..	..	..	3	..	.....		4
	47	..	42	8	21	..	.....		118
Chicago Medical	.....		.....		.....		.....		0
	35	12	..	..	3	..	.....		50
Loyola	9	1	..	1	.....		.....		11
	150	2	69	163	..	17	.....		401
Northwestern	4	..	12	3	4	..	16	..	39
	153	1	428	190	51	1	424	4	1252
U. of Chicago	12	1	9	6	.....		.....		28
	125	1	117	56	.....		.....		299
Illinois	5	..	5	..	1	..	.....		11
	156	..	154	7	34	..	.....		351
Indiana	5	..	..	2	2	..	1	7	17
	105	2	40	182	36	..	24	316	705
Iowa	9	..	..	..	.....		1	..	10
	146	16	9	3	36	6	2	11	229
Kansas	2	..	1	..	..	1	.....		4
	90	5	93	..	50	16	1	..	255
Louisville	4	..	..	2	.....		1	..	7
	123	..	117	106	1	32	3	..	382
Tulane	10	..	..	..	3	..	5	4	22
	146	5	85	24	71	51	413	178	973
Johns Hopkins	8	..	14	..	5	..	.....		27
	86	..	119	..	17	..	.....		222
Maryland	3	..	2	3	.....		.....		8
	187	1	58	485	14	15	11	..	771
Boston	9	..	2	8	.....		.....		19
	102	..	64	509	9	2	38	..	724
Harvard	.....		.....		.....		.....		0
	149	..	148	111	34	1	52	1	496
Tufts	6	..	12	1	..	3	1	1	24
	162	2	709	53	14	19	28	2	989
Michigan	9	..	3	5	9	..	.....		26
	179	..	192	75	121	3	1	1	572
Detroit	1	..	1	..	.....		.....		2
	55	12	46	5	12	..	.....		130

TABLE III. (1928-29)—Continued

SCHOOL	I. 1	2	3	4	II. 1	2	III. 1	2	Totals
Minnesota	5	..	1	..	9	..	.....		15
	106	..	16	9	205	1	49	1	387
Mississippi	2	..	..	..	.....		.....		2
	34	..	5	42	13	10	19	8	131
Missouri	2	..	..	..	.....		.....		2
	45	1	6	23	9	7	.....		91
Saint Louis	1	..	1	..	.....		.....		2
	273	16	113	322	31	25	1	..	781
Washington	3	..	..	..	1	..	1	..	5
	109	1	10	177	24	8	14	..	343
Creighton	2	..	..	1	.....		.....		3
	67	2	117	40	11	2	32	..	271
Nebraska	4	..	..	1	.....		1	..	6
	128	..	14	32	6	3	9	3	195
Dartmouth	.....		.....		.....		.....		0
	23	1	29	89	13	6	4	1	166
Albany	1	..	5	..	.....		3	1	10
	45	3	235	2	7	8	90	6	396
Buffalo	4	..	2	5	.....		6	..	17
	80	4	175	146	6	3	540	..	954
Columbia	10	..	6	1	8	..	.....		25
	136	..	80	8	193	..	.....		417
Cornell	9	..	16	..	5	..	2	..	32
	86	..	256	98	11	..	52	3	506
Long Island	3	..	4	9	.....		2	..	18
	148	2	118	386	4	8	172	2	840
New York Homeo	2	..	4	..	.....		2	..	8
	107	1	239	9	4	..	160	..	520
New York Univ	11	..	3	4	3	..	2	..	23
	184	..	135	272	74	1	98	19	783
Rochester	5	..	..	1	3	..	.....		9
	40	..	..	23	105	..	.....		168
Syracuse	4	..	6	..	.....		.....		10
	56	3	334	36	..	1	8	..	438
North Carolina	4	..	3	1	..	1	.....		9
	48	1	130	36	7	3	10	..	235
North Dakota	2	..	2	..	.....		.....		4
	32	2	171	5	..	5	2	..	217
Cincinnati	9	..	1	..	.....		.....		10
	79	5	88	23	26	5	3	..	229
Western Reserve	7	..	1	2	..	1	..	2	13
	88	1	10	321	53	2	10	..	485
Ohio State	2	..	3	..	1	..	.....		6
	99	..	76	16	4	2	..	1	198
Oklahoma	2	..	2	..	.....		.....		4
	61	8	69	44	..	3	20	..	205

TABLE III. (1928-29)—Continued

SCHOOL	I.				II.		III.		Totals
	1	2	3	4	1	2	1	2	
Oregon	4	..	1	1	.....	.....	.....		6
	80	3	35	11	27	1	.....		157
Hahnemann	.....				.....	.....	.....		0
	165	13	32	..	5	1	110	2	328
Jefferson	.....				.....	.....	.....		0
	222	..	7	358	403	..	.....		990
Temple	2	..	..	..	.....		1	..	3
	100	..	37	302	17	15	102	7	580
Pennsylvania	3	..	26	..	.....		..	7	36
	125	..	755	2	15	6	24	83	1010
Woman's Medical	49	1	3	..	1	22	27	4	107
	.....				.....	.....	.....		0
Pittsburgh	3	..	6	..	.....	.....	.....		9
	64	..	208	..	.....	.....	.....		272
South Carolina	..	..	3	..	..	4	2	..	9
	42	..	166	3	20	44	93	22	390
South Dakota	.....				.....	.....	.....		0
	37	2	5	35	3	13	10	1	106
Tennessee	6	..	..	..	1	..	.....		7
	137	11	24	44	22	..	1	..	239
Meharry	1	..	2	..	2	..	.....		5
	72	5	57	..	42	..	.....		176
Vanderbilt	6	..	2	1	.....	.....	.....		9
	57	..	120	137	9	2	.....		325
Baylor	5	2	..	..	.....	.....	.....		7
	102	18	2	6	..	2	.....		130
Texas	8	..	1	..	..	1	.....		10
	97	..	15	8	..	3	.....		123
Utah	..	..	1	..	1	..	.....		2
	32	..	7	2	9	1	22	11	84
Vermont	3	..	1	..	.....	.....	4	..	8
	39	6	3	..	.....		356	6	410
Med. Coll. Va	1	..	1	..	..	1	.....		3
	101	5	181	57	..	11	51	..	406
Virginia	3	..	..	..	.....	.....	.....		3
	62	4	..	..	.....	.....	.....		66
West Virginia	4	..	5	..	.....	.....	1	..	10
	56	3	145	12	17	7	93	2	335
Wisconsin	15	1	..	2	.....	.....	.....		18
	105	6	11	48	27	1	3	..	201
Marquette	..	..	3	..	.....	.....	.....		3
	72	5	53	31	6	1	.....		168
Alberta	3	..	..	..	.....	.....	.....		3
	28	..	5	..	2	..	.....		35
Dalhousie	..	..	1	..	.....	.....	1	..	2
	38	2	58	..	22	..	6	7	133

TABLE III. (1928-29)—Continued

SCHOOL	I. 1	2	3	4	II. 1	2	III. 1	2	Totals
Queen's	.....				.....		.....		0
	.....				.....		..	153	153
Toronto	8	1	..	..	1	..	.....		10
	81	7	5	2	27	..	.....		122
Western Ontario	4	..	..	1	.....		.....		5
	39	..	15	4	6	..	.....		64
McGill	5	..	5	..	.....		.....		10
	115	..	296	31	30	4	18	..	494
Montreal	1	..	..	1	.....		.....		2
	40	2	..	9	.....		.....		51
Laval	.....				.....		.....		.....
	.....				.....		.....		.....
Manitoba	.....				.....		.....		.....
	.....				.....		.....		.....
TOTALS									
Women	368	9	190	84	71	37	83	26	868
Men	7234	242	7495	5884	2566	472	3358	879	28130
GRAND TOTALS	7602	251	7685	5968	2637	509	3441	905	28998

TABLE IV. (1929-30)

SCHOOL	I. 1	2	3	4	II. 1	2	III. 1	2	Totals
Alabama	..	..	..	4	..	1	.....		5
	83	7	4	254	23	5	43	2	421
Arkansas	2	..	..	1	1	..	.....		4
	52	7	7	4	17	..	2	..	89
Med. Evangelists	13	1	2	..	2	..	.....		18
	120	10	21	11	16	..	.....		178
Stanford	4	..	3	2	1	..	.....		10
	51	..	24	51	14	1	6	1	148
Southern Calif	3	..	..	..	.....		.....		3
	62	3	16	17	92	..	12	4	206
California	11	..	..	1	8	..	.....		20
	64	..	9	48	26	..	6	..	153
Colorado	6	..	..	..	.....		.....		6
	59	5	..	26	8	10	35	16	159
Yale	1	..	..	7	.....		1	..	9
	49	..	21	342	.....		8	..	420
Georgetown	1	..	..	..	.....		.....		1
	128	2	24	163	..	7	107	..	431
George Washington	7	..	..	3	2	..	.....		12
	95	2	38	94	16	28	1	..	274

TABLE IV. (1929-30)—Continued

SCHOOL	I. 1	2	3	4	II. 1	2	III. 1	2	Totals
Howard	..	..	1	1	..	4	.....		6
	94	..	58	..	1	83	21	23	280
Emory	..	..	..	1	.....		.....		1
	75	4	..	206	2	3	15	..	305
Georgia	.....				.....		.....		0
	37	..	91	8	..	1	30	8	175
Chicago Medical	.....				.....		.....		0
	70	12	..	..	19	1	8	1	111
Loyola	3	..	1	6	2	..	.....		12
	199	3	98	294	8	9	35	..	646
Northwestern	5	..	25	2	.....		12	..	44
	161	..	648	167	28	..	295	3	1302
U. of Chicago	13	..	9	..	.....		.....		22
	146	..	233	71	.....		.....		450
Illinois	5	..	10	..	4	..	.....		19
	216	1	202	7	39	1	.....		466
Indiana	7	..	..	6	2	..	.....		15
	121	1	20	222	41	6	69	5	485
Iowa	6	..	..	..	1	..	.....		7
	154	5	8	3	6	11	2	..	189
Kansas	3	..	..	2	.....		.....		5
	77	5	75	14	20	17	36	2	246
Louisville	2	..	..	2	.....		.....		4
	33	1	38	135	12	31	11	2	263
Tulane	8	2	1	..	1	1	4	3	20
	132	12	61	21	54	47	244	84	655
Johns Hopkins	7	..	2	..	11	..	.....		20
	67	..	5	1	107	..	.....		180
Maryland	1	1	..	3	.....		.....		5
	144	5	279	366	9	13	38	1	855
Boston	4	..	1	3	1	..	.....		9
	104	1	38	465	18	1	44	10	681
Harvard	.....				.....		.....		0
	147	..	275	71	2	..	123	..	618
Tufts	6	..	1	..	..	3	..	1	11
	141	..	59	106	..	19	488	45	858
Michigan	17	..	6	3	5	..	.....		31
	157	1	134	90	149	..	10	1	542
Detroit	3	1	..	..	.....		.....		4
	77	11	29	5	15	..	8	1	146
Minnesota	4	..	..	..	5	..	1	..	10
	93	1	23	19	162	..	26	1	325
Mississippi	..	..	..	1	.....		..	1	2
	35	3	31	40	17	6	79	12	223
Missouri	.....				.....		.....		0
	41	1	15	19	4	1	.....		81

TABLE IV. (1929-30)—Continued

SCHOOL	I. 1	2	3	4	II. 1	2	III. 1	2	Totals
Saint Louis	1	..	1	1	.....	.....	.....	.....	3
	165	7	299	385	14	31	.....	.....	901
Washington	6	..	..	3	.....	.....	1	..	10
	108	..	52	262	21	17	49	7	516
Creighton	1	..	2	..	.....	.....	.....	.....	3
	124	1	154	64	11	14	50	..	418
Nebraska	5	..	..	..	2	..	.....	.....	7
	118	15	21	41	26	..	4	..	225
Dartmouth	.....	.....	.....	.....	.....	.....	.....	.....	0
	23	..	43	45	8	4	4	3	130
Albany	2	..	6	..	.....	.....	..	1	9
	36	4	224	9	12	1	112	7	405
Buffalo	9	..	3	..	.....	.....	3	2	17
	85	5	195	127	41	1	407	121	982
Columbia	1	..	17	2	6	..	.....	.....	26
	110	..	272	85	170	..	.....	.....	637
Cornell	7	..	1	22	.....	.....	.....	.....	30
	51	3	6	543	26	..	.....	.....	629
Long Island	3	..	4	5	.....	.....	6	..	18
	140	5	391	294	16	5	154	1	1006
New York Homeo	4	..	..	1	1	..	7	..	13
	112	5	..	38	15	1	546	..	717
New York Univ	13	..	..	4	1	..	.....	.....	18
	149	..	218	315	59	2	55	..	798
Rochester	1	..	..	..	.....	.....	.....	.....	1
	43	..	..	..	.....	.....	.....	.....	43
Syracuse	..	..	..	3	.....	.....	.....	.....	3
	57	..	..	476	.....	.....	.....	.....	533
North Carolina	2	..	..	..	1	..	1	..	4
	46	2	14	7	21	6	84	3	183
North Dakota	.....	.....	.....	.....	.....	.....	4	1	5
	34	..	..	5	11	..	220	1	271
Cincinnati	4	..	..	..	.....	.....	.....	.....	4
	107	2	72	54	58	3	1	..	297
Western Reserve	7	..	9	2	.....	.....	2	..	20
	78	..	137	352	11	3	19	3	603
Ohio State	3	..	..	1	3	..	.....	.....	7
	85	7	40	66	25	1	5	5	234
Oklahoma	5	..	..	3	.....	.....	.....	.....	8
	75	4	68	67	5	2	8	1	230
Oregon	6	..	6	..	1	..	.....	.....	13
	78	1	99	20	17	2	1	..	218
Hahnemann	.....	.....	.....	.....	.....	.....	.....	.....	0
	142	32	63	3	..	5	225	146	616
Jefferson	.....	.....	.....	.....	.....	.....	.....	.....	0
	205	..	121	376	198	..	117	..	1017

TABLE IV. (1929-30)—Continued

SCHOOL	I. 1	2	3	4	II. 1	2	III. 1	2	Totals
Temple	2	..	..	3	1	..	.....		6
	115	..	4	537	21	2	.....		679
Pennsylvania	5	..	25	..	1	1	1	..	33
	123	..	823	3	84	7	15	12	1067
Woman's Medical	39	3	1	5	24	..	.....		72
	.....				.....		.....		0
Pittsburgh	3	..	..	..	2	..	.....		5
	70	..	185	42	16	..	19	..	332
South Carolina	1	..	3	..	..	4	2	..	10
	38	2	214	1	..	50	87	17	409
South Dakota	1	..	..	..	..	1	.....		2
	28	1	56	26	2	18	1	1	133
Tennessee	1	1	2	..	.....		.....		4
	132	14	35	50	17	..	2	4	254
Meharry	2	..	1	..	.....		.....		3
	62	6	34	5	..	1	2	..	110
Vanderbilt	4	..	2	7	.....		.....		13
	65	..	73	265	9	2	18	..	432
Baylor	3	..	1	..	..	2	1	..	7
	108	16	24	23	1	16	3	..	191
Texas	4	..	..	..	.....		.....		4
	102	..	10	36	9	7	.....		164
Utah	2	..	1	..	.....		.....		3
	28	..	9	6	17	1	..	7	68
Vermont	3	1	1	..	.....		.....		5
	47	3	9	..	..	1	1	1	62
Med. Coll. Va	3	..	3	1	..	1	.....		8
	101	3	233	50	..	3	19	..	409
Virginia	2	..	2	..	..	2	..	1	7
	64	2	107	45	2	47	17	34	318
West Virginia	1	..	1	..	.....		2	..	4
	64	..	108	13	8	2	155	7	357
Wisconsin	4	..	..	3	.....		.....		7
	105	5	36	25	15	..	.....		186
Marquette	4	..	2	1	1	..	5	2	15
	76	5	207	40	26	3	264	44	665
Alberta	.....				.....		.....		.....
	.....				.....		.....		.....
Dalhousie	1	..	..	..	.....		1	..	2
	48	..	8	..	10	..	14	6	86
Queen's	.....				.....		.....		.....
	.....				.....		.....		.....
Toronto	7	..	..	..	2	..	..	1	10
	99	8	7	..	14	..	4	4	136
Western Ontario	6	..	..	..	.....		1	1	8
	40	1	2	1	5	..	25	13	87

TABLE IV. (1929-30)—Continued

SCHOOL	I. 1	2	3	4	II. 1	2	III. 1	2	Totals
McGill	4	..	2	2	.....		.....		8
	115	..	193	74	64	4	66	8	524
Montreal	.....				.....		.....		.....
	.....				.....		.....		.....
Laval	.....				.....		.....		.....
	.....				.....		.....		.....
Manitoba	7	3	..	..	1	..	.....		11
	68	15	..	..	26	..	.....		109
TOTALS									
Women	331	13	158	117	93	20	55	14	801
Men	7153	277	7450	8216	2036	563	4575	678	30948
GRAND TOTALS	7484	290	7608	8333	2129	583	4630	692	31749

TABLE V.

Summary of Acceptances—Men

No. of Applicants	Times each applied	No. of Applications
4282	1	4282
906	2	1812
504	3	1512
306	4	1224
172	5	860
132	6	792
94	7	658
106	8	848
51	9	459
35	10	350
36	11	396
15	12	180
13	13	169
13	14	182
11	15	165
8	16	128
6	17	102
6	18	108
5	19	95
5	20	100
3	21	63
1	22	22
3	23	69
1	25	25
1	27	27
2	29	58
1	30	30
1	36	36
1	38	38
6720		14790

Summary of Acceptances—Women

226	1	226
39	2	78
19	3	57
15	4	60
7	5	35
3	6	18
1	7	7
1	8	8
1	10	10
1	12	12
1	16	16
1	21	21
315		548

TABLE VI.

Summary of Refusals—Men

No. of Applicants	Times each applied	No. of Applications
3951	1	3951
882	2	1764
454	3	1362
276	4	1104
211	5	1055
126	6	756
110	7	770
96	8	768
73	9	657
54	10	540
42	11	462
34	12	408
34	13	442
18	14	252
16	15	240
11	16	176
10	17	170
11	18	198
11	19	209
4	20	80
5	21	105
3	22	66
3	23	69
1	24	24
2	25	50
2	26	52
4	27	108
3	28	84
1	29	29
2	30	60
1	33	33
1	34	34
1	35	35
1	45	45
6454		16158

Summary of Refusals—Women

118	1	118
28	2	56
12	3	36
3	4	12
2	5	10
1	6	6
1	7	7
1	8	8
166		253

Refusal of Well Prepared Students

I will confine my discussion to matters not obvious on direct examination of Table IV. The question has been asked again and again if it is true that well prepared students are being refused matriculation in our schools of medicine.

Particular effort was made this year to secure an answer to this question. A very carefully worded letter was sent to each school urging that in column three—"refused because class full"—only those students should be reported who in every respect met the entrance requirements of the school, and who were refused for the sole reason that the class was full. Certain schools, it will be observed, have reported hundreds of such students in column 3. Other schools, however, have reported but few; and we may assume that these schools have reported students in this column who were refused for the sole reason that the class was already filled.

We note that Alabama reports four; Arkansas, seven; Medical Evangelists, twenty-three; Stanford, twenty-seven; University of Southern California, sixteen; University of California, nine; and so on down the list. While the numbers reported in the California schools are rather large, the numbers, I presume, are reported accurately, for three of the four schools of California accept comparatively small classes, which, of course, are filled quickly. Iowa reports eight such students; Hopkins, seven; Cornell, seven. Of course, we do not know that these students did not secure entrance in some other school. Many of them probably did.

Further, and perhaps more reliable, evidence on the refusal of well prepared students is presented in the studies made at Long Island, St. Louis and Boston Universities, showing that a goodly number of individuals who applied ten or more times—those of our multiple application group—did thoroughly creditable work in each of the three institutions reporting. Since these multiple applicants of any one year include a certain number of students who had been refused in a preceding year or in preceding years, it would seem beyond question that some students are being refused who would meet the class average in the majority of the schools of the country. When, however, we consider the total number of students applying, it is my judgment that less than one-half of one percent of applicants, on a very generous estimate, can be assumed to fall in this group. This is a total very much below the number of students dropped by medical schools of the United States and Canada at some time during the freshman year of the course of medicine because of poor scholarship.

It seems evident, therefore, that the medical schools of the United

States and Canada can accommodate all well prepared applicants. Their failure to do so is due not to lack of capacity but to errors in judgment in the selection of certain members of the freshman class. It may be presumed that the careful studies being made of the best methods for the selection of freshmen medical students will not only result in the exclusion of a still higher percentage of those who fail but in the inclusion of some of that relatively small group of students, if such exists, who may fail to secure matriculation in any medical school of the United States or Canada.

Men and Women Students

The summary of accepted and refused students, Tables V and VI, is presented separately for men and for women. An examination of Table V shows that 6,720 men and 315 women, a total of 7,035 students, were accepted for matriculation this year. It should be understood that the number of students reported by any school as accepted differs from the number that will be finally reported as enrolled. Students who were reported by schools as accepted and withdrawn were included in the accepted list.

It is quite obvious that the problem of multiple applications is more a problem of men applicants than of women applicants. Only twelve women (Tables V and VI) applied more than five times, whereas 167 men applied from ten to thirty-eight times and were finally accepted, and 275 men applied from ten to forty-five times and still failed to secure matriculation in any medical school.

Geographical Distribution of Multiple Applicants

The geographical distribution of the 171 multiple applicants of Table V, 167 men and four women, is shown below. We see the problem is essentially as developed a year ago in that it is a greater New York City problem, about 70 percent of these multiple applicants coming from within a radius of twenty-five miles from New York:

Geographical distribution of the 171 multiple applicants

New York	93	District of Columbia	1
New Jersey	23	Oregon	1
Pennsylvania	12	Texas	1
Connecticut	8	Tennessee	1
Ohio	7	Rhode Island	1
Massachusetts	7	Porto Rico	1
California	6	Arkansas	1
Illinois	3	Delaware	1
Montana	1	Minnesota	1
Florida	1	Ontario	1

I present next a study of the 3,586 students refused in 1926-27, accounting in complete detail for these 3,586 students.

TABLE VII.

1926-27	1927-28	1928-29	1929-30
Refused-1st yr. 3586	Accepted 750	Accepted 86	Accepted 17
	Refused-2nd yr. 589	Refused-3rd yr. 129	Refused-4th yr. 33
			Did Not Apply 79
		Did Not Apply 374	Accepted 6
			Refused-3rd yr. 17
			Did Not Apply 351
	Did Not Apply 2247	Accepted 114	Accepted 28
		Refused-2nd yr. 119	Refused-3rd yr. 25
			Did Not Apply 66
		Did Not Apply 2014	Accepted 31
			Refused-2nd yr. 30
			Did Not Apply 1953
	Old Refusals 589	Accepted 774	Accepted 126
	New Refusals 3934	Refused-2nd yr. 567	Refused-3rd yr. 174
			Did Not Apply 267
		Did Not Apply 2593	Accepted 113
			Refused-2nd yr 120
			Did Not Apply 2360
		Old Refusals 815	Accepted 922
		New Refusals 4631	Refused 932
			Did Not Apply 2777
			Old Refusals 1331
			New Refusals 5289

Of the 3,586 students refused in 1926-27, we may summarize our further record as follows: 1,953, or 54 percent, have not applied again in any one of the three succeeding years; 1,633 have re-applied from one to three times, of whom 1,032, or 29 percent, were finally accepted and 601, or 17 percent, were repeatedly refused. Of the 1,032 accepted, 750 were accepted in 1927-28; 200, that is 86 plus 114, were accepted in 1928-29; and 82 (17 plus 6 plus 28 plus 31) were accepted in 1929-30. Of the 601 refused, 33 were refused four times, 121 three times, and 447 twice.

The 33 people who were refused four times made in four years a total of 600 applications. We may conclude they were not rejected because of lack of persistence.

A study of Table VII shows how many of the 6,620 applicants refused this year were refused a second, third or fourth time. We find that 1,082 were refused a second time, 216 a third time, and 33 a fourth time. That is, among the 6,620 students refused this year, 1,331 had been refused two, three or four times, and only 5,289 were refused for the first time this year. It becomes obvious that there is a very great actual increase in the number of students refused, and that the accumulation from preceding years accounts for about 20 percent of the total refusals.

Sex Distribution of Applicants

Let us now examine the charts from the standpoint of sex distribution. The number of women applying for matriculation in medical schools during the past four years is 4.4 percent of the total number of applicants. The number of women accepted in medical schools during the past four years is 4.6 percent of the total number accepted; so that women are accepted in numbers proportionately greater than the number applying. Of the total number of women applying, 60 percent are accepted; of the total number of men applying 56 percent are accepted.

For the year 1929-30 the finding is as follows: The number of women applying is 3.5 percent of the total number of applicants; the number of women accepted in medical schools is 4.4 percent of the total number accepted. Of the total number of women applying, 65 percent are accepted; of the total number of men applying, 51 percent are accepted.

If we accept the findings of Dean Johnston of the School of Liberal Arts of Minnesota as applicable to all colleges and universities, we must conclude that many more girls than boys in the higher levels of scholarship go to our institutions of higher education. If this is true

in general, then we are probably justified in assuming that a higher percentage of the women who present themselves for matriculation in medical schools are well prepared for the study of medicine.

It is very interesting to observe that only from 10 to 14 percent of the women elect to go to Woman's Medical College. The tables show the schools of preference of the women applicants. It should be remembered, of course, that certain schools do not accept women at all.

The obvious conclusion to be drawn from this sex distribution study is that if there is any discrimination, it is in favor of rather than against the woman applicant for matriculation in medical school.

In closing this study which has now extended over four years, I wish again to express my appreciation of your co-operation and I trust you share my conviction that it has been worth while.

DISCUSSION

DOCTOR BEGG: Where do those 171 come from? Are they the ones accepted or refused?

DOCTOR MYERS: The 171 come from this group right down in here, the men who were finally accepted, but who applied more than ten times.

DOCTOR REES: Do you have any information regarding how many schools required a fee to be paid on application before considering the credentials? If a man applied in forty-five different schools, in how many would he have had to pay a fee?

DOCTOR MYERS: How many schools do that? How many require a preliminary fee?

* * * Ten hands were raised.* * *

DOCTOR MYERS: That would materially reduce the number of applications.

DOCTOR SIMONSON: I should like to know whether the increase in rejections over a period of four years covered by the study was absolute or whether it was also relative; in other words, does the percentage of rejection increase each year as well as the actual number of rejections because of the number of applicants?

DOCTOR MYERS: The increase is absolute, though not as great as appears in the chart, for the total is reduced by repeaters.

DOCTOR SIMONSON: Does not that mean either a decrease in the character of the preparation of the men applying or an increase in the requirements, an increase in strictness of requirements?

DOCTOR MYERS: I think there is an actual increase of requirements. First of all, some schools are establishing qualitative requirements that they raise from time to time. They say they can take only 120 men, and they take the 120 best men they can find. Others say they will take men only from their own state. There is a third, an extra factor, however: For three years past now we have been refusing students at the increasing rate of 1,000 a year.

Some of those each year come back, and there is a growing, a piling up, an accumulation of those students refused in preceding years.

DOCTOR SIMONSON: The increase in the number of rejections may be due to the increased number of multiple applications.

DOCTOR MYERS: Or increased accumulations of refusals from other years.

DOCTOR CUTTER: Is there any suggestion in your cards as to the number of re-applicants from year to year who spent the intervening time in acquiring additional arts college preparation?

DOCTOR MYERS: The assumption is that those who have ultimately been accepted out of the refused group have made additional preparation and have been acceptable.

DOCTOR HARVEY: How many that were accepted actually turned out this year and how many last year?

DOCTOR MYERS: I have not checked on that. Dr. Colwell, did you check on this matter?

DOCTOR COLWELL: I did not.

DOCTOR MYERS: Does anyone know the total enrollment in the freshman classes of the medical schools of the United States and Canada for last year? I got a telegram as I had my bag in my hand, which added some of the last figures to the charts, so they have, of necessity, some elements not worked out.

Federation of State Medical Boards

At the annual meeting of the Federation held in Chicago, February 18, Article II of the Constitution was amended as follows:

In all matters of premedical education, courses of study and educational requirements for the degree of Doctor of Medicine or its equivalent, the Federation recognizes the Association of American Medical Colleges as the standardizing agency for this purpose.

Scholastic Aptitude Tests for Medical Students*

F. A. Moss
George Washington University

The Problem

In a report at yesterday's meeting of this Association, Dr. Myers pointed out that in the school year 1929-30 there were 31,481 applications to the medical schools from 13,569 applicants. Of this number, only 7,019 were accepted, which indicates that those in charge of admission must refuse approximately three out of four applications. The problem then is for the admission officers of each school to select the best one out of four applicants. Or, if we look at it from the standpoint of all schools, the problem is to secure the most promising seven thousand from the total number of applicants.

The problem of selecting medical students is further emphasized by a study of the mortality in the last five graduating classes in medical schools. In these classes more than one-fifth of all those who began work in the freshman year were unable to complete the four year course.

Our Attempt to Meet the Problem

With this situation in mind, a study of the freshman medical class at George Washington University was begun in 1927 and continued through 1928-29. An attempt was made to devise a test which would indicate ability to successfully pursue a medical course, and which might be used as one of the determining factors in selecting students for admission to the medical school. The encouraging results of this first trial were set forth by Dr. David Robertson in his address before the last Annual Congress on Medical Education, Medical Licensure and Hospitals.[1]

At that time, Dr. Robertson, representing the American Council on Education, agreed to publish the scholastic aptitude test which we were using for admission to medical school; and for demonstrating its value to medical school administrators, to furnish without charge a sufficient number of tests to be given last April and May to the freshman classes in the various medical schools. The tests were to be given by some one in the local medical school, and forwarded to our office for scoring and tabulation. The results were then to be sent to the

*Read at the Fortieth Annual Meeting held in New York City, Nov. 7-9, 1929.
1. Journal American Medical Association, Vol. 92, No. 17, April 27, 1929, p. 1402.

dean of the school cooperating so that he might have them to compare with the grades made by the students in the first year class, or to use in any way that he might wish in connection with elimination or classification of students. It was further arranged that after the grades for the first year work were in, a transcript of these grades was to be forwarded to our office so that a study of the efficiency of the test for predicting grades might be made.

List of Colleges Cooperating

The schools that cooperated are divided into two groups: the first group, consisting of Baylor, Boston, Cincinnati, Creighton, Dartmouth, George Washington, Hahnemann, Meharry, Minnesota, Syracuse, Temple, Tennessee, Western Reserve, and Woman's Medical College, gave the test last May to their freshman classes. The second group, consisting of California, Cincinnati, Colorado, Dartmouth, Duke, George Washington, Iowa, Minnesota, Northwestern, Ohio, Stanford, Temple, University of the Philippines and Woman's Medical College, either gave the test to all applicants, or gave it to the class after school began this fall. In reply to our request for cooperation the following additional schools stated that, although they were not in a position to cooperate this year, they would be glad to cooperate at some future date: School of Physicians and Surgeons, Columbia, Cornell, Johns Hopkins, Tulane, Illinois, Pennsylvania, and Western Ontario.

How the Test Predicts

As already pointed out, the object of this study was to improve our present methods of predicting scholastic success in medicine and of picking out those who would fail in a medical school. How well we succeeded in doing so is shown graphically in charts 1, 2 and 3.

In chart 1 the freshman students were divided into ten equal groups on the basis of their scores on the Scholastic Aptitude Test. Each bar shows the freshman medical grades for one-tenth of the group. For example, in the highest tenth of test scores, 10 percent make 90 or over, 83 percent between 80 and 89, and 7 percent between 75 and 79, with no failures. Contrast this with the lower groups of test scores in which there are none above 90, and the percentage above 80 is relatively small, but the number of failures becomes increasingly larger as we go down on the aptitude scale.

Chart 2 represents graphically the average freshman medical grades and the range of the middle fifty percent of grades made by each of these ten groups, reading down from the highest to the lowest. The

average grades in the medical school decrease steadily from the high test score groups to the low score groups. It will be noticed for some

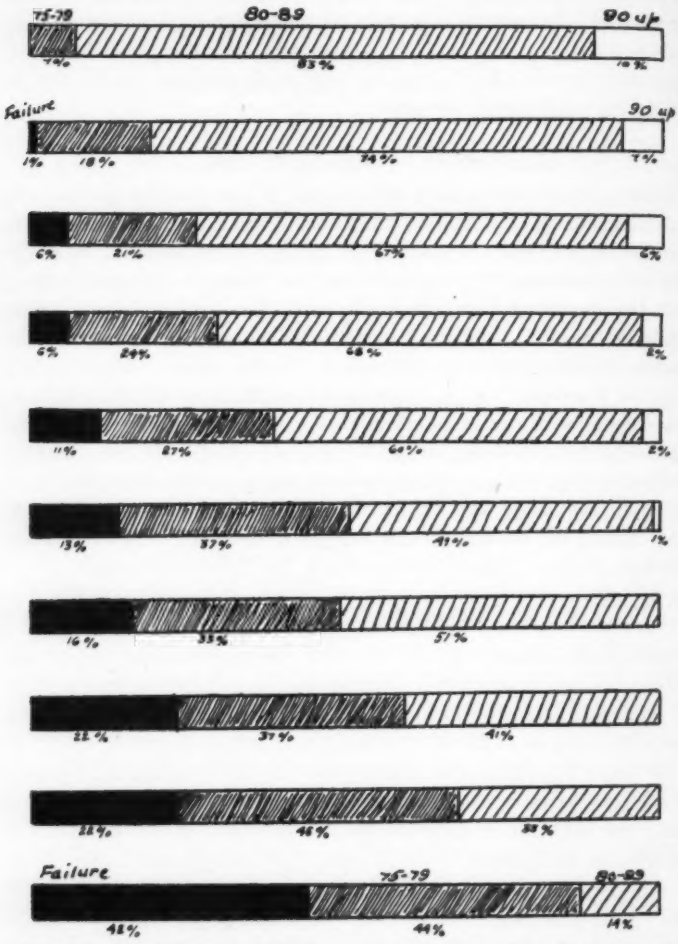


CHART 1—Distribution of freshman medical grades from highest tenth to lowest tenth of test scores.

of the lower groups that even the highest quarter of grades is practically all below the lowest quarter of grades for some of the high score groups.

In chart 3 the students were divided into four groups on the basis of Scholastic Aptitude Test scores. In the highest quarter, that is, those making scores of 181 and up, 8 percent make 90 or above and 1 percent fail. In the third or next to the highest quarter 3 percent make

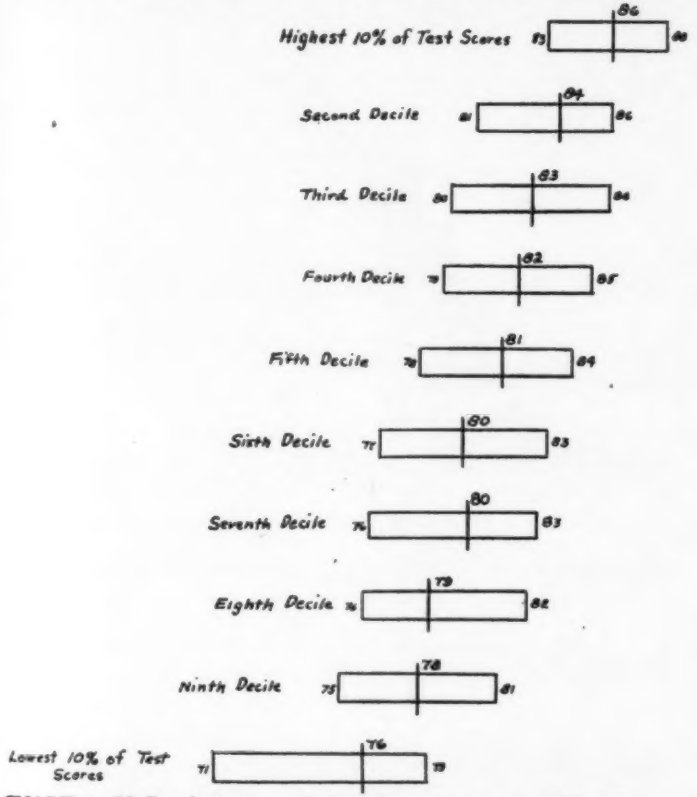


CHART 2—Median freshman medical grades and range of middle 50 percent of grades for different test scores.

above 90 and 6 percent fail. In the second quarter only one student makes 90 or above and 16 percent of the group fail. While in the lowest quarter none make over 90 percent and 31 percent fail. Thus it is seen that out of the total group of about 900, only one student in the lower half of the group made an average of 90 or above.

The same thing is shown by the unusually high correlations which were obtained between scores on the Medical Aptitude Test and the

final grades given by instructors in the medical schools. The correlation for the group as a whole was 0.59. The correlation in two schools was as high as 0.72, and in only two schools did we get a correlation

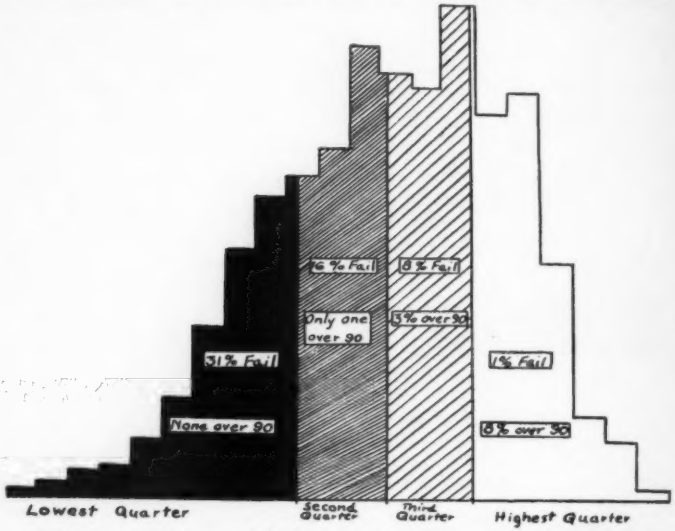


CHART 3—Failures and high marks in different test score quarters.

below 0.45. These correlations would indicate that in this test we have an instrument with very high predictive value.

How the Test Compares in Predictive Value with Other Criteria of Success in Medical School

The real value of the Scholastic Aptitude Test is seen in comparison with other methods now commonly used for admitting students to medical school. The two most commonly used criteria for admission to medical school are: (1) the number of semester hour credit offered in premedical college work, and (2) grades on premedical subjects.

(1) Number of Semester Hours Premedical Credit: There is a marked tendency in the medical schools at the present time to demand three instead of two years premedical work before admitting the students to medical school. A few schools will accept no one unless he has a bachelor's degree; and in those schools that will admit without the bachelor's degree, considerable preference is given to those who have more than the minimum of 60 hours required for entrance. Of the schools from whom we have grades, all with the exception of one

school, admitted students with varying numbers of credits from 60 to 180. After omitting the school all of whose students had offered 120 hours of the equivalent of the A.B. degree, a correlation was made between the number of semester hours offered for entrance and the grades made by the students on their freshman work. The correlation is plus 0.09. Thus, it is seen that the number of hours of premedical work that the student has completed before entrance is of little value in predicting how well he will do in the medical school. The results are shown graphically in chart 4. A glance at the chart will show that there is relatively little differentiation in grades between those who have

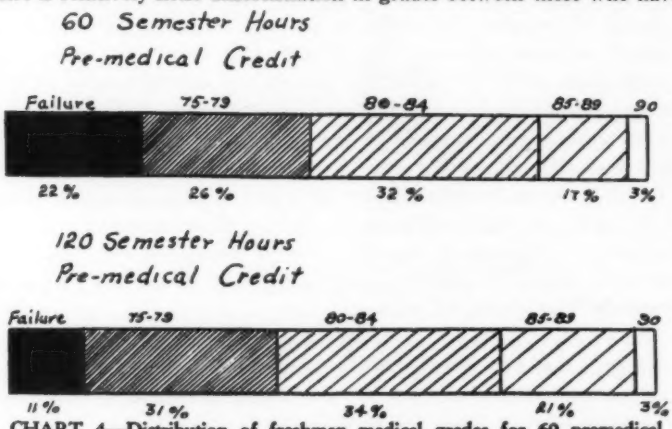


CHART 4—Distribution of freshman medical grades for 60 premedical entrance units and for 120 units.

had two years of college premedical work and those who have had four years. Inasmuch as there is considerable agitation to raise premedical requirements from 60 to 90 semester units, we arbitrarily took 90 as the dead line for admission to see just what would be the result if such a rule were passed. By doing so we found that if all who offered less than 90 units for entrance had been refused we would have eliminated 60 percent of those who fail, but in eliminating this 60 percent of failures, we would at the same time have eliminated 38 percent of those who made 85 or above. Actually, however, as an eliminating device a semester hour premedical requirement would not eliminate failures to the extent indicated by the figure of 60. In most instances it would simply delay entrance until the requirement could be met by further college work.

(2) Grades on Premedical Subjects: A second criterion which is probably more generally used for admission is the record made by stu-

dents in their premedical work. This is apparently a much better criterion than the one we have just considered, but the total number of cases on whom we were able to get the premedical grades is not very large. Taking an average of the premedical grades and correlating these with the grades received in the first year medical work, we secured a correlation of 0.50. If the medical schools were arbitrarily to require a "C" average (above 80) for admission to medical school they would eliminate 64 percent of the failures, but also 16 percent of those making 85 or above.

To compare the Scholastic Aptitude Test with the two foregoing criteria, if we take the results on the test and arbitrarily refuse admission to those who make below 144 (the lower 40 percent), we would eliminate 75 percent of the failures, and only 12 percent of those making 85 or above in their freshman medical work. Relative efficiency of the various criteria would be indicated by the extent to which each predicted failures without also eliminating good students. Exclusion of high grade students by a criterion is just as indicative of its failure as is the inclusion of poor students. Taking these factors into account, the relative efficiency of the three criteria mentioned are: number of entrance credits, 22 percent; premedical grades, 48 percent; Scholastic Aptitude Test scores, 63 percent.

We secured the best results by combining the Aptitude Test scores with the premedical grades. When such a combined criterion was applied to the group on which both records were available, we found that 94 percent of the failures would be eliminated, and 20 percent of those who would make 85 or above. A relative efficiency rating for such a combined method of selection would be 74 percent. The relative efficiencies of the various methods are shown graphically in chart 5.

One other criterion used in selecting medical students deserves study. This is the personal interview which some schools are now requiring of all applicants, as a basis for selecting their students. At George Washington University the various applicants to this year's class were interviewed by a committee of six men of the medical faculty, each interviewer assigning to the student a rating of from zero to four on the basis of the interview. At the close o f this year the results of this method will be correlated with the grades to see what value it has. It is quite probable that the ideal method for selecting students will be a combination of this method with the results of the aptitude tests and the premedical grades. The interview will without doubt secure certain data that will not be brought out by the premedical grades nor the medical aptitude test. And it is also quite obvious that each of

the other criteria gives results that cannot be obtained by any other method. After a sufficient amount of study has been made we will be able to give relative values or weights to the Medical Aptitude Test,

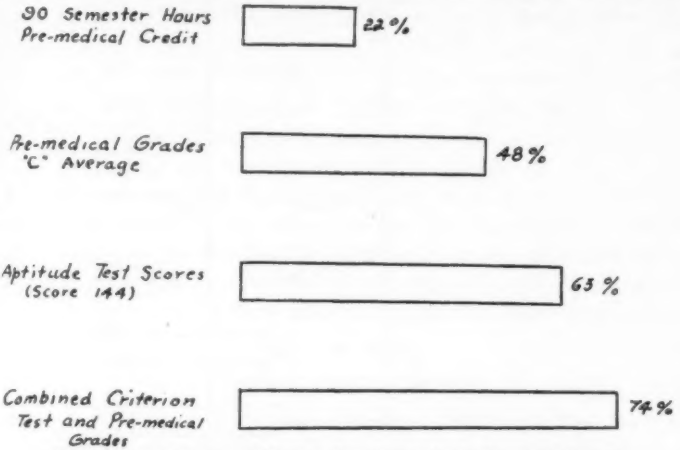


CHART 5—Relative efficiency of various criteria for admission to medical schools.

the premedical grades, and the interview, and to arrive at a composite rating for each medical student that will provide a much improved criterion for admission.

Other Things Revealed by the Study

There were a few other things incidental to the study that are worthy of notice. Chart 6 shows the relative standing of students in the various medical schools. The bar at the top shows the range of scores for the middle 50 percent of the group as a whole, and each bar below corresponds to the middle 50 percent of a separate medical school. For obvious reasons the names of these schools are omitted, but if the Dean of any cooperating school wishes to find out the relative standing of his students, he may do so. This information will of course be given only to the officials of the school concerned. A glance at the chart will show that the lowest 25 percent of some schools are above the highest 25 percent of others.

From this it is obvious that some schools are securing students with much greater aptitude than are others. In school A, for example, 50 percent of the grades are 194 and above; whereas in school N 50 percent of the group make below 93. The length of the lines between

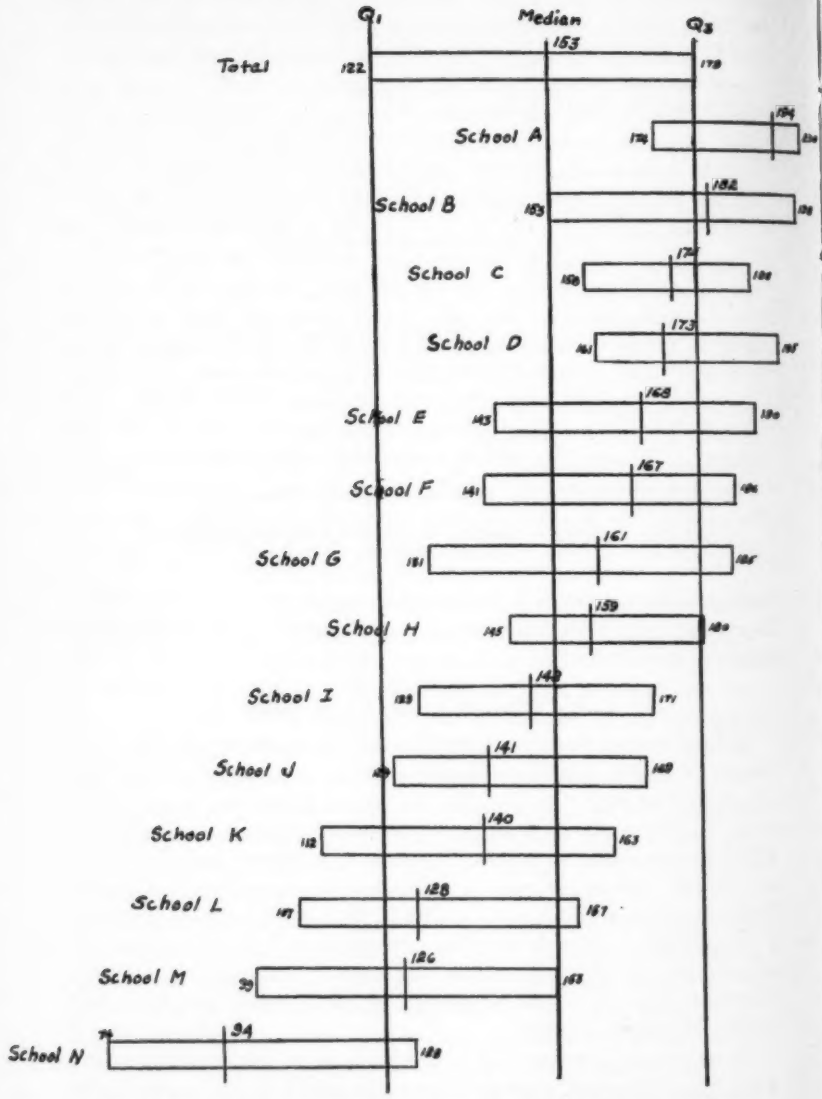


CHART 6—Range of middle fifty percent of scores of students at end of first year medicine.

the first and third quarter shows the compactness or homogeneity of the student body, the shorter the line the more homogeneous the group, which, from the standpoint of teaching, is quite desirable. The range of the middle 50 percent of scores in school A is 25 points which represents a very compact student body. On the other hand, the range of school M is 54 points and indicates a very heterogeneous group with many very poor students as well as many very good students.

Chart 7 shows the range of the middle 50 percent of students who are premedical or just entering the medical schools. It is interesting to note that the average for this group as a whole is somewhat below that of the students at the end of the first year of medicine. This is primarily due to the fact that the poorer students are eliminated before the close of the first year's work. At the end of this year it is planned to study the scores on these groups as compared with their medical school work.

Proposals for the Future

In the foregoing it has been shown that the Scholastic Aptitude Test for Medical Schools can be of considerable assistance in the selection of medical students. It is not proposed that the test should replace the current methods of selecting students, but that it should be an additional criterion. It would seem desirable in furthering this study that next year arrangements be made whereby similar tests with different content will be given on the same day in all the medical schools of this Association, to all the students applying for admission to any medical school. If, for example, a student who lived in California wished to enter Western Reserve, he could take the test at Stanford or the University of California.

The tests of all students would be forwarded to our office for scoring and tabulation. If the tests were given the middle of April we could have all the tabulations made by the latter part of May and a copy of the total tabulation of scores for all the ten or twelve thousand students together with the scores of the individual students applying for admission to any particular medical school could be sent to the Dean concerned. In that way the Dean could see at a glance how the students applying to his medical school compared with the group of applicants as a whole. And, moreover, he could see at a glance how any individual student compared with the others who were applying for admission to his school. Chart 8 shows such a comparison between the total distribution and the distribution of grades in two schools in which the test was given this year. The Dean of School A can see

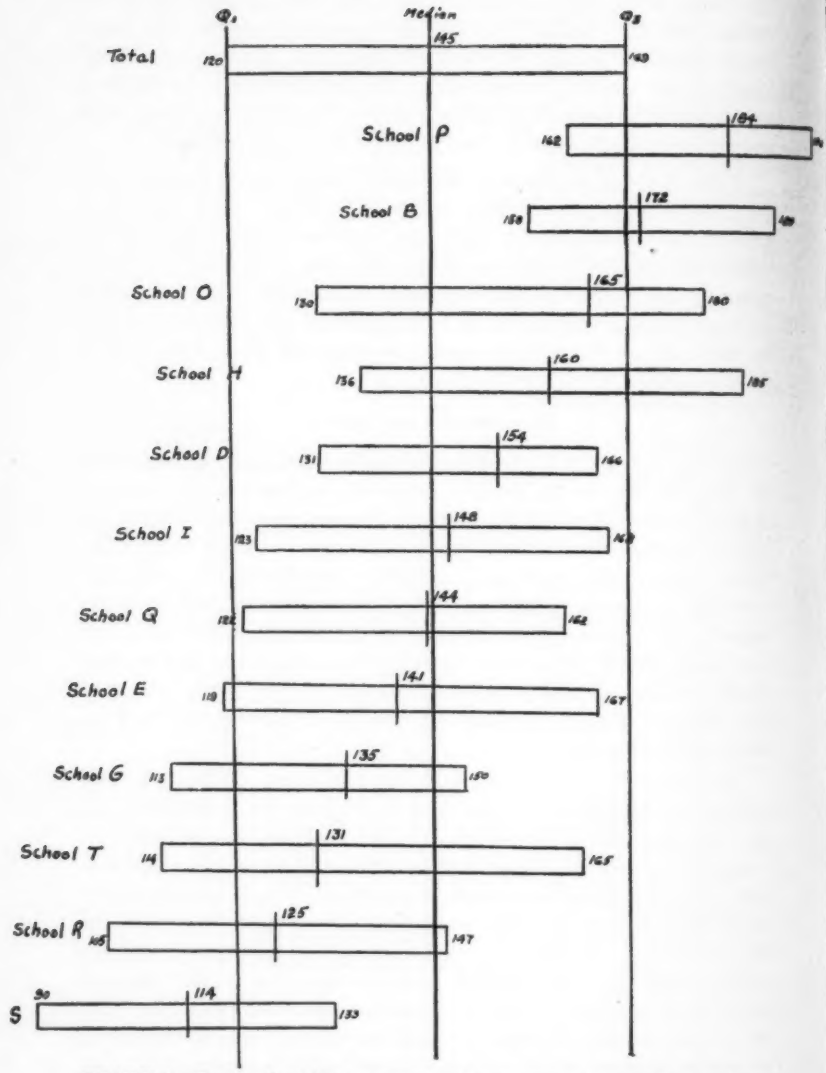


CHART 7—Range of middle 50 percent of test scores of premedical students.

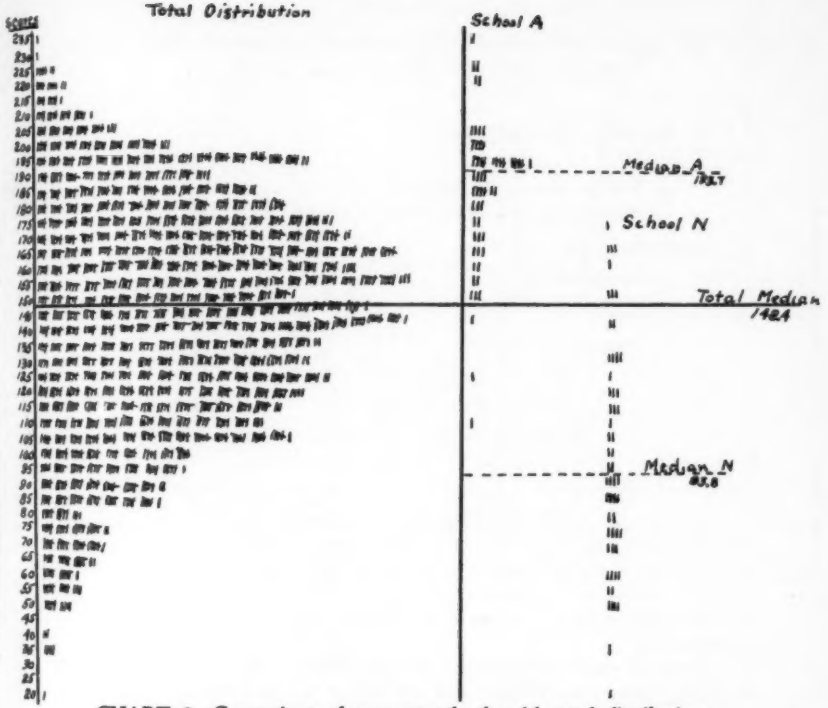


CHART 8—Comparison of separate schools with total distribution.

at a glance that all of his students except 3 are above the average for the country as a whole, while the Dean of School N has a less encouraging picture.

DISCUSSION

TOROLD SOLLMANN, Western Reserve University: When Dr. Robinson presented this subject to the Association last year, I felt somewhat skeptical, but was sufficiently interested to offer our class on the experimental altar. I may supplement the general averages of Dr. Moss with some further particulars; first, in comparing the aptitude rating with the rating obtained by our own entrance rating which was not based on aptitude tests; and second, because our personal knowledge of the students helps to explain the reasons for discrepancies in both systems. Dr. B. M. Patten, to whom I am also indebted for the compilation of the data and charts, gave the test to the first year class in the middle of the second semester, when the students had finished biochemistry and first year anatomy, so that the test probably measured achievement as well as aptitude. Furthermore, some of the "misfits" had already been eliminated. Dr. Moss and his staff graded the aptitude tests without any knowledge of our entrance rating or final grades.

BASIS OF 15 POINT ENTRANCE RATING SYSTEM
Western Reserve University, School of Medicine

ACADEMIC ACHIEVEMENT

Standing in Class	0-3
Grades in Premedical Subjects	0-3
College Rating as a differential on above	0-3

PERSONALITY

Recommendations	0-3
Interview	0-3
POSSIBLE TOTAL	15

KEY TO POINTS

3 Very Desirable	1 Fairly Desirable
2 Desirable	0 Undesirable

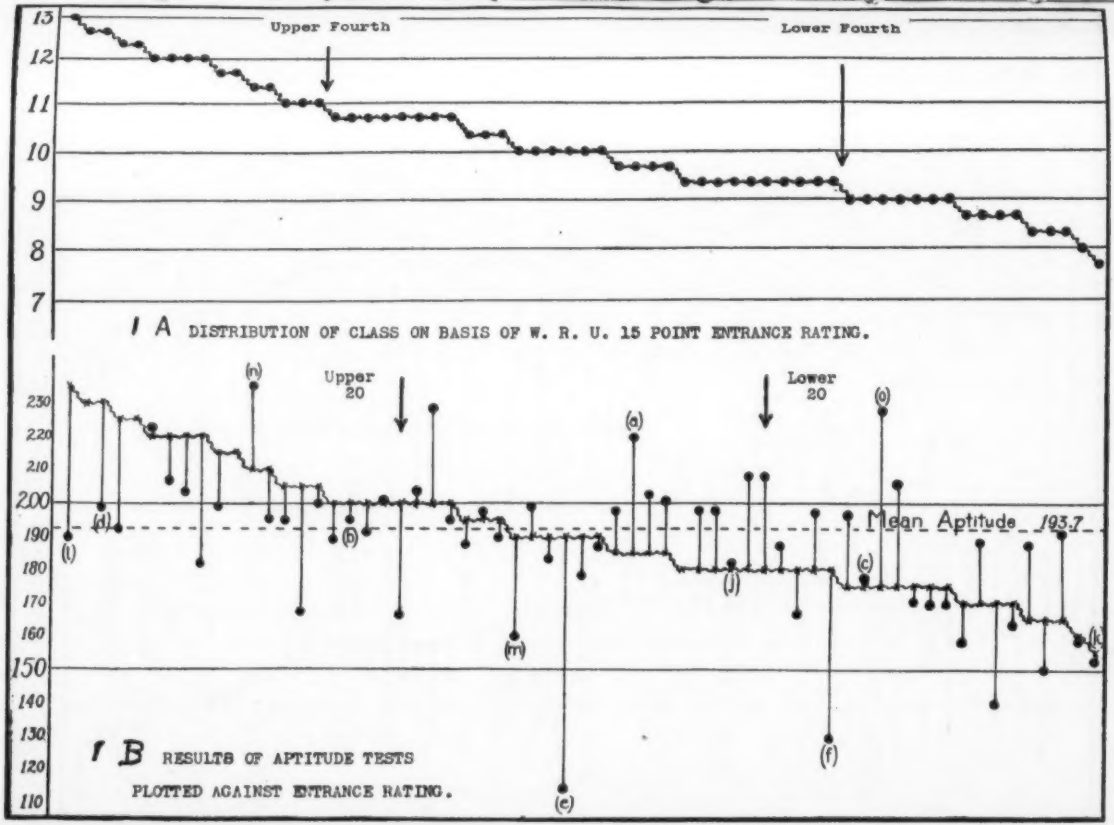
Our entrance rating comprises the five criteria, shown in the diagram; the rating being based on the sum of these points. Additional differentials are used in some cases, for instance, for age or years out of college. It will be noted the points for academic achievement predominate; on the other hand, the committee is free to refuse any applicant whose personality it considers objectionable.

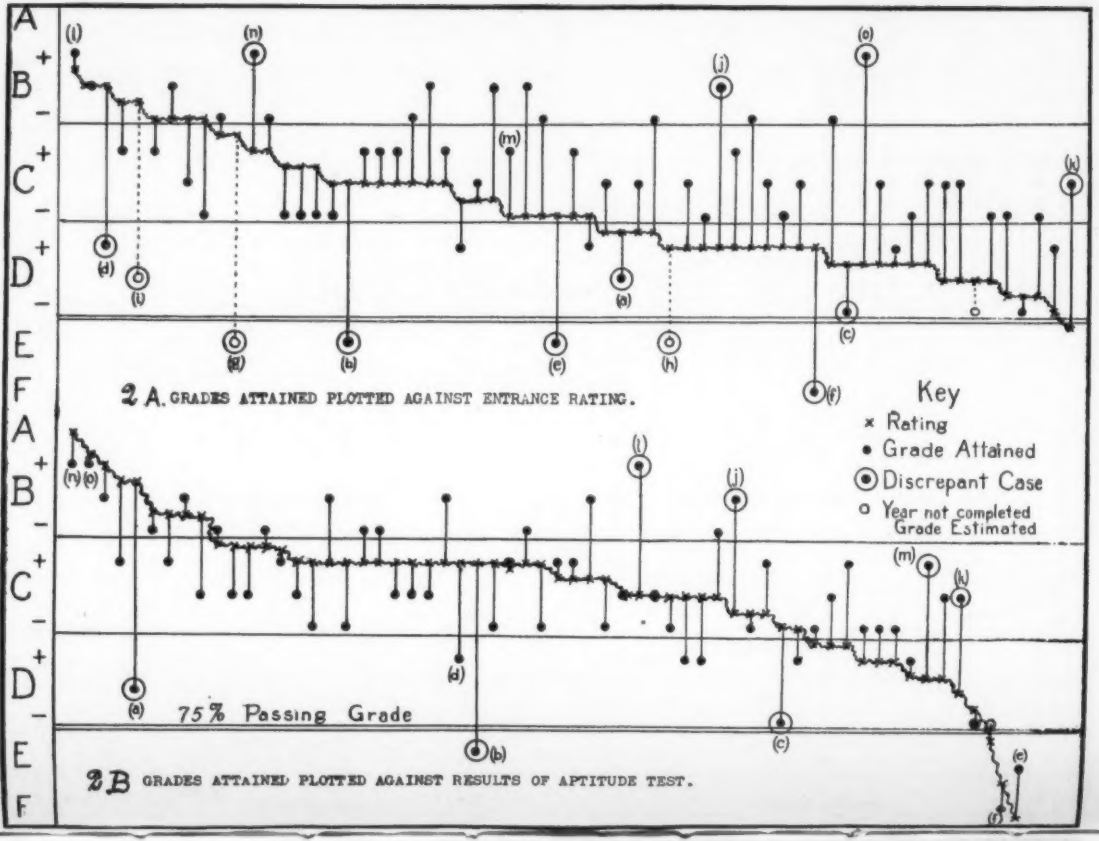
Figure 1A shows, as points, the entrance rating given to the 62 members of the class. They ranged from 13 to 8–, half of the class falling between 9+ and 11 points, as shown by the arrows.

Figure 1B shows the results of the aptitude tests of the same students, as reported by Dr. Moss, plotted as solid points against the "Entrance Rating" curve of Figure 1A. At first it may seem that there is only a very rough correspondence between the two curves; but closer study reveals a very fair average practical agreement. For instance, of the 20 students having the highest entrance rating, only 3 fell materially below the mean of the aptitude tests (193.7); of the 20 having the lowest entrance rating, only one rises materially above the mean aptitude. In the three most serious discrepancies, the entrance rating was in error and the aptitude test was correct; two of the men had been rated too high by their under graduate colleges; and the third had been rated low at college because he had not applied himself to the work.

Figure 2 plots attainment in medical studies, expressed as the average grades at the end of the first year, on (A), the entrance rating, and on (B), the aptitude test. The medical school grades fall into 4 zones, indicated by the horizontal lines:

A+ to B–, 100 to 85%, 16 students
C+ to C–, 84 to 80%, 32 students
D+ to D–, 79 to 75%, 9 students
E+ to F , 74% and below 5 students


13
12
11
10
9
8
7
Upper Fourth
Lower Fourth
1 A DISTRIBUTION OF CLASS ON BASIS OF W. R. U. 15 POINT ENTRANCE RATING.
230
220
210
200
190
180
170
160
150
140
130
120
110
Upper 20
Lower 20
Mean Aptitude 193.7
(n)
(o)
(a)
(d)
(l)
(b)
(m)
(j)
(c)
(k)
(f)
(e)
1 B RESULTS OF APTITUDE TESTS
PLOTTED AGAINST ENTRANCE RATING.



2 A. GRADES ATTAINED PLOTTED AGAINST ENTRANCE RATING.

2B GRADES ATTAINED PLOTTED AGAINST RESULTS OF APTITUDE TEST.

The solid points represent actual grades, the circles are estimates of the probable grade of students who left before the end of the year. Cases which fall seriously out of place are surrounded by a circle.

The figures show a good general correspondence between the medical grades with the entrance points as well as with the aptitude tests, the difference of spread being due to the method of charting. The average deviation from the medium grades does not differ greatly from the two criteria, being plus or minus 2.7% on the aptitude and plus or minus 2.9% on the entrance rating. However, at the most important regions, namely, at the two extremes, the best and the poorest students, the aptitude test shows a distinctly better correspondence. The conspicuously discrepant cases compare as follows (omitting the students who left before the aptitude test):

Missed by both aptitude and entrance	5
Aptitude correct, entrance wrong	5
Entrance correct, aptitude wrong	3

Another arrangement of the data shows:

	By Entrance Points	By Aptitude Tests
Rated too low	4	4
Rated too high	6	3
Total	10	7

The difference is in favor of the aptitude test, but is too small to be conclusive. The individual analysis of the causes of the conspicuous discrepancies reveals the following: (the small letters identify the students in the figures).

A1. Ranked higher than attainment both by the entrance rating and by the aptitude test.
- (a) Serious slump: financial worries.
- (b) Serious slump: family worries.
- (c) Moderate slump: discouragement.

A2. Ranked higher than attainment by entrance rating, ranked correctly by aptitude test.
- (d) Should have received a negative entrance point differential for eight years out of college.
- (e) Overrated at college and interview, due to good personality.
- (f) Overrated at college.

A3. Relatively high entrance rating, withdrew with low grades before aptitude test.
- (g) Nervous instability, not sufficiently discounted.
- (h) Difficult to appraise because of emotional shyness.
- (i) Many years out of college; too much weight had been given to maturity.

B1. Ranked lower than attainment, both by entrance points and by aptitude test.
- (j) Immaturity at entrance.
- (k) Rating correct, but attainment raised by diligence.

B2. Aptitude test lower than attainment, entrance rating correct.
- (l) No explanation.
- (m) Aptitude probably correct, but attainment raised by diligence.

2B GRADES ATTAINED PLOTTED AGAINST RESULTS OF APTITUDE TEST.

B3. Entrance rating lower than attainment, aptitude test correct.

(n) Correctly appraised at entrance, but ranked somewhat lower because of college rating.

(o) Had not applied himself at college.

From these data it appears that when the individual circumstances are taken into account, there remains only one student (l) whom the aptitude test failed to group correctly. By the same measure, the entrance point system appraised six students distinctly too high and two students distinctly too low.

Altogether, we need not be ashamed of the results of the compound entrance-point system, and it is doubtless capable of further improvement if its results are checked systematically from year to year. It has an added value in that it counts personal qualities and cultural background which are so important to physicians.

After all, however, aptitude for medical study is a fundamental condition for medical study. In the majority of cases this can be appraised quite well by the academic record of the applicant, but the appraisal can evidently be improved by being checked against the aptitude test; and when the two conflict, the aptitude test appears the more reliable. This holds true particularly for the "problem cases," the students of unusual personality; those who did not apply themselves at college, because they had other interests or no interests; those who have been out of college for some time; and those who have followed some unusual course of academic preparation.

However, I do not believe that the subject is finally solved. Further study of these tests by this Association would be very valuable, and I move:

First, that the Association record its sense of the importance of the study of aptitude tests in relation to the acceptance of students for medical schools as illustrated by the studies and data submitted by Dr. Moss.

Second, that the Association appoint a committee to direct an experimental study of aptitude tests for admission to medical schools along these lines.

WM. A. PEARSON, Hahnemann Medical College: I should like to second both of the motions and to say that Dr. Moss has requested me, as one of the representatives of the colleges participating in his study, to discuss this paper. I should like to call to your attention the fact that out of a possible grade of 250 points our group of students having scores on the average of 101, all failed to pass the mark of our freshman year and that the next group above the ones who actually failed had an average of 160 points.

I think everyone who has to do with the selection of students will agree that none of us are infallible and as a matter of fact, I am quite sure we are free to admit that we make many, many mistakes. We realize that we are attempting to select students who ten years from the present time will be the men in the medical profession, and it is not unusual to expect a great many differences.

Another factor I should like to bring out is that the scholastic standing of the students is not in itself a measure of their fitness for the practice of medicine. I believe that all of us who have had a considerable amount of experience in selecting students pride ourselves, to some extent at least, upon our ability to select students. We profit by our experience when we lend money to our friends, and we learn, perhaps, either not to lend money, or that we lose a friend when we do lend money. A child, or even a dog, will select

a friendly companion and we, I believe, pride ourselves in being able to pick out the qualifications of a man when we interview him, as to his general fitness for the profession of medicine.

In discussing this matter with a number of our members, I think that Dr. Patterson, of Jefferson, made the best practical suggestion when he said that the deans of our institutions should be subjected to this test, and, provided they made a score of over 12 per cent, they should be continued in office.

H. G. WEISKOTTEN, Syracuse University: I, too, have been skeptical in regard to aptitude tests, but it does appear that we have here a definite factor which will be of value to us in connection with the evaluation of students and that we have a factor which might be standardized by the same tests being given to applicants of all schools in all parts of the country at the same time.

A. C. BACHMEYER, University of Cincinnati: At Cincinnati we have been using a psychological test at the time of entrance, but after the men have been selected, for the past five or six years. We have been unable to determine its value because there was very little correlation between the scores in that psychological test and the scholarship averages of the students.

After the students were given the aptitude tests last spring, we held the scores that Dr. Moss returned until the time of the meeting of the Promotions Committee and at that time every member of that Committee was distinctly impressed with the rather definite correlation that existed between the results of the test and the students' grades in the various subjects.

In discussing the test, it was the opinion that there were two elements that were not covered by the test and which will probably not be covered by any tests. One is the factor of the time element involved. The man with slow mental reactions is very apt not to score very highly. The other is that no test can measure the degree of effort, perserverance and energy, that a student puts into his work and these probably account for some of the discrepant cases Dr. Sollmann has indicated, but we definitely feel that the test is of much value and hope it will be continued because the one trial, while indicating its merit, is really not proof of its value. We hope Dr. Moss' offer will be accepted so that the results of the test when applied to the entire group of entrance applicants may be seen.

WM. C. BORDEN, George Washington University: I think Dr. Moss deserves a great deal of credit for the work he has done. I should like to point out what does not appear in his paper, i. e., that the test as formulated by him is not like the ordinary intelligence test at all. It is a special test intended to determine ability to successfully pursue the study of medicine and perhaps this accounts for the remarkable efficiency of the test.

I might say parenthetically that this test is to my mind an illustration of modern practical psychology as departing from the old metaphysical psychology, and that perhaps a psychologist of the future will be, or should be a graduate of medicine, as Dr. Moss is. Then the subject of human behavior and mental efficiency can be viewed from the same basic biologic standpoint as the action and function of the liver or any other physiologic activity of the body.

Regarding our own school, we worked entirely independently from Dr. Moss; in other words, our faculty knew nothing of his tests, when they were

made, or what the ratings were. In the class tested, while we made all our selections by competition, as we had at least three or four applicants to every one that we accepted, and though we scanned all premedical credentials with great care and tried to take only applicants having the best, of the twelve below Dr. Moss' point of efficiency whom we accepted on this competitive basis, nine failed, two failed only moderately and were allower to repeat, and one passed with a great deal of difficulty.

This matter comes down to an economic proposition. It is an economy to the students and to the school, if every admitted student can go through the whole course. If he cannot do so, from the standpoint of the student who fails, he has wasted time and money; and from the school's standpoint, it has wasted teaching time and equipment money.

JAMES SULLIVAN, Albany, N. Y.: I should like to ask in connection with this kind of work whether it is possible to determine some policy for the exclusion of students. I will tell you why I ask that question. We are flooded at Albany with letters which are sent to us by legislators and by the Governor, coming from various people wishing us to do something about getting them entered in medical schools. Of course, we can do nothing with them and we don't pretend ever to try to do anything with them except in a friendly way. We sometimes ask the dean of a medical school to tell us whether space can be found for a certain student, and I have had this reply in one instance: "We could accommodate better students and more students if we could get rid of our dead wood."

The question therefore comes up, "Has a study ever been attempted in the methods or policies of excluding students from medical school when you determine that they are absolutely unfit?"

I had a student who came to me in another department of the university and said, "I have a right to try to fail, haven't I?"

"Oh, yes," I said, "you have, although it is rather expensive."

It put his point of view before me.

You have perhaps made this study; I do not know, but it would be interesting if you did make such a study to determine if there is any method in somewhat common use for getting rid of students of the "dead wood" variety.

BURTON D. MYERS, Indiana University: May I ask a question of Doctor Moss, regarding Chart No. 2? Doctor Moss, I was rather surprised that there was so much variation, if I understand correctly, in your better group which had an average of 86 (is that correct?) and the lower group was around 76.

DOCTOR MOSS: That is right, I think.

DOCTOR MYERS: With the great number failing in the lower group, I was surprised that the average should still be 76. I should have expected it to be very much less than that.

I was quite amazed at the very great variation these seems to be at the present time in the group of students picked out by the different schools. You had your Group A there—understand I am for this test and I am delighted with the work Doctor Moss has done, but I want to be clear on some points —your school A had the vast majority of its students in the high scholarship column and here was your lowest school which had hardly anybody in the average column, with the great majority over in the low group.

I believe there is nothing that correlates quite with that, is there? There is no school in the country, let us say, 60 per cent, or 50 per cent, or even 40 per cent of whose graduates are failing, and yet it seemed, if I understood the classification in that lower school, that there was a group so low that I am surprised they would ever get by the State Boards. Will you help me out on that, Doctor Moss?

DR. MOSS: It is apparent that I failed to make clear what the separate bars of the chart represent.

All the students on whom we had grades on the first year's medical work, approximately 1,000 students, were divided into ten groups according to their scores on the aptitude tests. Each bar represents approximately 100 students. Take the lowest group or the lowest 10 per cent, in which the average grade in the first year's medical work was 76, and 44 per cent had grades between 75 and 79. Of this group, 42 per cent failed. If 50 per cent had failed the average grade would have been 75, that is, half would have made above and half below 75. The 42 per cent failures agrees perfectly with the 76 average grade. This is the lowest hundred on our test, and while 42 per cent failed, the average for the group as a whole was 76. The bars of Charts 1 and 2 represent the grades made by the students from the lowest to the highest deciles of the scores on our tests.

In the last chart, showing the aptitude test scores for the separate schools A and N, you will notice that the majority of the students in School A are above the median of all the schools together, while the majority of those in School N are below the total median. Yet both schools show a distribution of grades, with about the same average in freshman medical work. School N had several more failures than School A, but School N gave some high grades among the students that fell in the upper part of the test distribution. For a man with average ability it is much harder to get high grades in School A than it would be in School N. In other words, the competition in some schools is much higher than in others. In School A you have strong competition due to the highly selected group, whereas in School N the competition would not be nearly so severe. The correlation between the grades and our prediction in School N was .72. It was .60 in School A. This shows that it predicts the success of the good students as well as the success of the poor students.

The question was also raised as to how we would handle the tests next year. The details have not been worked out. It is proposed to do either of two things: 1. Give the tests on the same day to all the applicants at the various medical schools; or 2. Give the tests on the same day to all the applicants at the premedical schools. The advantages of the first proposal are that it would place the responsibility of administration of the tests in the hands of the representative from the medical school, and thus it would be more carefully done. It would also enable us to give the tests in fewer places. The chief advantage of giving the tests at the premedical schools is that by doing so we could save the students the expense of reporting to the nearest medical school for the test. In either case the tests would be sent to our office for correction.

As for the multiple applicants, we would send to each dean under either system the names of all applicants who were applying to his school, and if an applicant were applying to five or six places his test score would be sent to

all of them. In that way the dean would know how this particular applicant compared with the other applicants who were applying to his school. It would also enable the dean to see at a glance whether his applicants were on the whole above or below the average of the total group of the fifteen thousand applicants.

WILLIAM DARRACH, Columbia University: It seems to me this offers one of the most helpful aids in getting students into our schools who are best able to meet responsibilities. At first glance, however, it might seem that these results were a little discouraging in that they were not 100 per cent. I think that the correlation shown already is unusually high and most encouragingly high. But aptitude tests are still more or less in their infancy and will undoubtedly increase in their efficiency as the years go on. I doubt, however, if they will ever be able to take into account that peculiar characteristic which we are all looking for in our students which we may call personality or character or something else, it is that something without which a man cannot be a good doctor, without which a man cannot live up to his responsibilities for being responsible for the care of human beings, and until we can find some method of testing that, we shall have to maintain something besides this rather mechanical method to go along with it.

Personally, I feel that the interview with the student, combined with the reports which you get, as described by Dean Hawkes, come nearer to helping you get a little insight into personality and character than any method we know; therefore, they must be combined.

We have two resolutions offered, and the first one I will ask Dr. Sollmann to restate so that it will be clear in his own words, the fact that the Association approves the idea, and so forth.

DR. SOLLMANN: I move that the Association record its sense of the importance of the study of aptitude tests in relation to the acceptance of students in medical schools as illustrated by the studies and data submitted by Dr. Moss.

DR. DARRACH: This motion has been seconded. Is there further discussion? . . . The question was called for and the motion was put to a vote, and was carried. . .

DR. SOLLMANN: I move that the Association appoint a committee to direct an experimental study of aptitude tests for admission to medical studies along these lines.

DR. DARRACH: Do you wish to include the method of appointment and size of the committee?

DR. SOLLMANN: No. I will leave that to the officers.

DR. DARRACH: This motion has been seconded. Is there further discussion? . . . The question was called for and the motion was put to a vote, and was carried. . .

(The personnel of this committee is as follows: Torald Sollmann, chairman; F. A. Moss, W. Darrach, Ben Wood and H. G. Weiskotten.

JOURNAL
OF THE
Association of American Medical Colleges

Volume 5 MARCH, 1930 Number 2

DR. FRED C. ZAPFFE, Editor, 25 East Washington Street, Chicago

An Ideal Education for Medicine

William Shippen, Junior, was born in Philadelphia in 1736. He attended Nottingham Academy where he received a solid grounding in the classics. Later he attended the College of New Jersey (Princeton) where he shone in classical learning and oratory. He delivered a Latin oration which attracted much favorable comment. Then he returned to Philadelphia and for three years studied medicine with his father. After that he went to London where he lived with John Hunter and studied anatomy and midwifery under William Hunter. Later he went to Edinburgh where he graduated in 1761, aged 25 years. He returned to Philadelphia the following year and took up practice and teaching.

It is well to pause and compare this case with that of any average present day medical student. To what thoughts does it give rise?

Very Helpful Cooperation

Heads, Directors, Leading Members of the Faculty:

I call attention to the Journal of the Association of American Medical Colleges which, I believe, you receive regularly.

(a) To make this publication more alive, representative and effective the editor desires news items and manuscripts dealing with medical education. These may be sent to the Secretary and Editor, Dr. F. C. Zapffe, 25 E. Washington St., Chicago.

(b) It will help the Journal if readers, so far as may be, will patronize its advertisers.

(c) The next meeting will be held in Denver (University of Colorado, Medical School) Oct. 14, 15, 16, 1930. The Secretary desires topics for discussion. Perhaps some of you can attend this meeting.

(d) We want to get the 1931 meeting for the University of Minnesota and hope you will use your influence.

E. P. LYON.

Present Trends in Medical Education

1. Reduction of the number of hours.

2. Liberalization of the course (by teaching only basic courses and utilizing the rest of the time for electives).

3. Teaching of the specialties only in their relation to the two main courses—general medicine and general surgery.

4. Reduction in the number of didactic hours and an increase in the number of clinical hours.

5. Encouragement of the student to "self-education."

6. Better correlation of various subjects.

7. Elimination of duplication in teaching.

8. Development of teaching in outpatient department.

9. Elimination of long summer vacations.

10. Substitution of a few comprehensive examinations for many departmental examinations.

F. H. KRUSEN.

College News

University of California Medical School

The organization of new activities in the field of medical history and bibliography includes instruction and research in these subjects and supervision of the development of the medical school library.

Dr. Le Roy Crummer has accepted an appointment as clinical professor of medical history and bibliography, effective January 1, 1930, and Dr. Sanford Larkey is to be assistant professor of medical history and bibliography, effective July 1, 1930.

Long Island College Hospital

Announcement is made of the Van Cott Fellowship for research in pathology or bacteriology. The fund is $37,000 and the income is $1,850. $1,250 of which goes for salary and $600 for equipment. It is a part of the Hoagland Laboratory Foundation.

New York Homeopathic Medical College

In preparation for the plans for the rebuilding of the medical college and Flower hospital, additional adjacent property has been purchased at a cost of $257,500. The property of the institution now includes the block between 63rd and 64th Streets on York Avenue and extends four hundred feet on 63rd and 64th Streets.

The following fellowships have been created:

One in general surgery, one in gynecology-obstetrics, one in general medicine, one in urology, and one in orthopedic surgery and fractures. Examinations for these fellowships will be held sometime in April. Those applying must have graduated from a class "A" medical school, and have completed a rotating internship of not less than twelve months in a hospital accredited for intern service by the Council on Medical Education and Hospitals of the American Medical Association.

An honorarium of $50 per month will be granted with each fellowship. The service is for one year with the privilege of a second year provided the work of the fellow is acceptable.

New York Post Graduate Medical School

The consolidation of this school and the Reconstruction Hospital has been announced. The combined institutions will assume the name of the first named. Unified operation became effective about January first.

Columbia University College of Physicians and Surgeons

Faculty appointments: James L. Joughin and C. Burns Craig, assistant clinical professors of neurology; Josephine B. Neal, clinical professor of neurology; Claus W. Jungeblut, associate professor of bacteriology; William R. Torgerson, associate professor of tropical medicine; James Ramsay Hunt and Walter Timme, professors of clinical neurology; Ward A. Holden, clinical professor of ophthalmology; Joshua Rosett, assistant professor of neurology; Charles A. McKendree, assistant professor of clinical neurology.

University of Maryland School of Medicine

The late Dr. John F. Weaver, of Manchester, made the university the residuary legatee of his $150,000 estate, the money to be used to establish a profes-

ssorship, fellowship or research fund.

The university also received a gift totaling about $150,000, which Mrs. Lillie H. Coit, San Francisco, willed in honor of her father, Charles M. Hitchcock, a graduate of the medical department of the University of Maryland. The fund will be named in his honor and the income used for the medical department.

University of Southern California School of Medicine

Le Roy Crummer has been appointed professor of the history of medicine. Dr. Crummer was for many years professor of medicine in the college of medicine of the University of Nebraska.

Verne R. Mason, at one time associate in medicine in the Johns Hopkins University School of Medicine, has been appointed clinical professor of medicine.

Robert W. Lamson has been appointed associate professor of bacteriology and immunology.

Northwestern University Medical School

A thirty-day postgraduate course of instruction in physical therapy is announced. The course will be fundamental in character, covering the construction, theory and operation of the various types of apparatus used. There will be clinical lectures emphasizing the clinical applications. Registrations will be limited and will be closed on receipt of the full number of reservations. Reservation will be made on receipt of a deposit of $25.00, such deposit to apply upon the fee for the course which is $150.00.

University of Colorado School of Medicine

The Commonwealth Fund has made an additional appropriation of $27,000 to continue some psychiatric fellowships at the Psychiatric Hospital in Denver. Six fellows are now working. The additional appropriation will take care of three new appointments in 1930 and three in 1931. The term of appointment is two years.

Medical College of Virginia

Manfred Call has resigned from the deanship, a position he has held since 1922. Lee E. Sutton, Jr., assistant professor of pediatrics, has been appointed acting dean.

Duke University

The General Education Board, New York, has authorized grants to Duke University School of Medicine, Durham, totaling $300,000 over a period of five years. It is also announced by the dean that the new medical school will open October 1, and will admit first and third year students. The school will follow the four-quarter plan.

University of Cincinnati

The appointment of twenty directors of departments in the general hospital and the tuberculosis sanatorium, all of whom are said to be faculty members of the college of medicine has been announced.

Ohio State University

Creation of a department of medical and surgical research was authorized by the board of trustees as an expansion of the work of the college of medicine. The purpose will be "to coordinate the medical research in medical and surgical fields in the college, to work with the clinical members of the present staff and to inaugurate a program of scientific investigations that should be very fruitful of results." The personnel will include a professor, an assistant, technicians and clerical assistants.

College of Medical Evangelists

The trustees are contemplating the erection of a new main building for the

New building of White Memorial Hospital and College of Medical Evangelists.

White Memorial Hospital, which institution is owned and operated by the college for teaching purposes. The present structures were built on the bungalow plan during the World War. A new up-to-date building of fireproof construction is needed. It is estimated that the proposed structure will cost about $500,000. This does not include equipment. Already funds amounting to $220,000 are in hand, and a campaign is being carried forward to secure the remainder. The building will be of reinforced concrete and of "pyramid" style. It will be designed to accommodate approximately two hundred patients. The firs level will be devoted to quarters for a very complete physiotherapy department. The top story will be devoted to operating theatres, designed specially with a view to teaching purposes. The building is connected with the new outpatient department so that patients can be passed from one to the other without going out of doors.

Leo Buerger, of New York City, has accepted the position of professor of genito-urinary diseases.

A new outpatient department has recently been completed and is now being operated to excellent advantage, and is a valuable addition as a teaching unit. The building contains a number of teaching rooms and an amphitheater equipped

New dispensary building of College of Medical Evangelists and White Memorial Hospital.

with an electric stethophone which has proved to be of great value.

Yale Medical School to Study Teeth

Announcement has recently been made that, by means of a grant from the Rockefeller Foundation, the first comprehensive investigation by medical specialists of the rôle played by the teeth in disease and health will be made by the Yale Medical School. The ultimate purpose is to create a group of medical specialists in teeth, just as there are medical specialists in diseases of the other organs of the body. In addition to concentrating upon the natural history of teeth, causes of the diseases of teeth and the relation of these diseases to general body conditions, attention will also be given to the development of operative procedure more in accordance with modern knowledge of surgery.

Yale University School of Medicine

Dr. Walter Spielmeyer, who succeeded the late Emil Kraepelin as head of the Psychiatric Research Institute in Munich, will spend a month here to lecture and aid in organizing the division of neuropathology in connection with the human welfare group at Yale. The subjects of his lectures will be (1) relationship of brain changes to vasomotor disturbances; (2) epidemic encephalitis; (3) significance of local factors in brain lesions.

New York Polyclinic Medical School

Construction work has recently been begun for the ten story outpatient department building. By transferring the clinical space in its present building to the new building, thereby enlarging its wards, the institution can care for another hundred and fifty ward patients for teaching purposes. The new building will be devoted to postgraduate teaching and will be fully equipped for all branches of medicine and surgery.

Woman's Medical College of Pennsylvania

Work on the new college and hospital building at the junction of Abbotsford and Henry Avenues has begun and, it is expected, will be completed by the Fall. The cost of the ground and building is about $1,000,000. The hospital will contain about 150 beds.

At the east end will be the class rooms, laboratories, lecture rooms and offices of the college; at the west end will be the hospital section. Between will be the administrative section for both college and hospital. Over all, on the top floor, the building being of four-story and full story basement construction, will be, for the time being, dormitories for the nurses who will be quartered eventually in a separate building.

Temple University School of Medicine

Receipt is announced of gifts amounting to $250,000 to be used as part of a fund necessary for the erection of the central tower in the school of medicine building group, by Cyrus H. K. Curtis; $35,000 as an endowment for the laboratories of the school of medicine in memory of his wife by George D. Van Sciver, and $25,000 for modernization of the roentgen-ray department of the medical school by Edward W. Bok.

University of Chicago

Tuition in all departments of the graduate schools of arts, literature and science will be raised from $80 to $100, and in the law and medical schools from $100 to $125 beginning with the summer quarter. The change is said to be for the purpose of providing means to increase the salaries of professors and instructors.

General News

Psychiatric Fellowships

The Commonwealth Fund has made an additional appropriation of $27,000 to continue a series of psychiatric fellowships at the psychopathic hospital at the University of Colorado School of Medicine, Denver. Six fellows are now in training. The new appropriation will make possible the appointment of three more in 1930 and three more in 1931 for periods of two years.

Johns Hopkins Hospital to Build Clinic

A new 350 bed clinic will be built. It will increase the capacity of the hospital by only 165 beds, as the present wards F, G and H will be replaced by the new building. Its entire bed capacity will be used for ward purposes and the poor of Baltimore, but the building will provide laboratories for research and facilities for hydrotherapy and physical therapy. The improvement will represent an expenditure of $1,300,000, which has been supplied by the General Education Board.

Study of Normals

The Commonwealth Fund has appropriated $5,000 for carrying on a study of normals by Dr. Theodore H. Weisenburg at the Graduate School of Medicine of the University of Pennsylvania in an attempt to determine the basis for drawing a line between normal and pathologic conditions in speech, sensory and motor activities in children as a guide in clinical diagnosis.

Thomas Smythe Hughes Medical Research Fund

Grants of £50 have been made to H. Avery for research on cerebral tumors produced experimentally with Jensen's yeast cultures and with neoplastic grafts, and to M. F. Keene and E. E. Hewer for research on the development of the human fetus.

Medical Center for Negroes

At a dinner given recently in Chicago, plans were discussed to establish a modern medical center for negroes in Chicago, for which at least $3,000,000 will be needed. The dinner was called by Julius Rosenwald, who has made a generous contribution to the fund. John D. Rockefeller, through the General Education Board, has given $1,000,000. The fund is to be spent as follows: $1,000,000 for a teaching fund for the University of Chicago to build a training center for the instruction of medical students; this amount is already assured; $900,000 for the new Provident Hospital and Training School, of which $750,000 will be used to buy the present plant of the Chicago Lying-In Hospital; about $150,000 of this will be used for remodeling and new equipment; $1,000,000 as an operating fund, which is the minimum required.

The program of cooperation between the University of Chicago and the Provident Hospital provides for, among other things: (1) Medical and surgical care of the sick, in a modern hospital and outpatient department, with a staff of highly trained physicians and with modern equipment and laboratory facilities for the diagnosis and treatment of disease. (2) An increased number of internships for colored medical graduates. (3) Postgraduate education and training. (4) Professional advancement of highly qualified physicians on a par with opportunities available only to whites. (5) Opportunities for teaching and research

as well as clinical medicine, surgery and for the specialties. (6) Opportunities for studying diseases which present the gravest health problems of the negro. (7) The study of negro public health problems and the training of negro public health workers. (8) Training under improved conditions of a greater number of negro nurses. (9) Training of negro technicians for laboratory, roentgen-ray and electrocardiographic work, and for the development of administrators for negro hospitals. (10) The study of negro social problems and training of negro social workers.

Research Fellowship in Tuberculosis

The Valmora Sanitorium for the tuberculous, at Valmora, New Mexico, has announced the establishment of a research fellowship in tuberculosis. Applications should be made to the medical director, Dr. Carl Gellenthien. It is reported that a committee of physicians eminent in the field of tuberculosis will act in an advisory capacity in connection with the appointment and work of these fellows. The duration of the appointment is one year, with privilege of renewal by consent, and carries with it a financial return and maintenance.

This sanitorium was established twenty-five years ago by about twenty of the largest business houses in Chicago for the benefit of their employees, and has been under the superintendency of Dr. William T. Brown ever since.

Abraham Flexner Lectures

Sir William Hardy, of Cambridge University, will deliver these lectures for 1930-1931 at the Vanderbilt University School of Medicine.

American Students Abroad

An increasing demand from American medical students for admission to British and Scottish universities is reported by the Institute of International Education, New York. It is attributed to the tightening of admission requirements in American medical schools.

The University of Edinburgh is said to have been obliged to institute an American quota, as fifty or more applications were recently received from graduates in America with advanced credits. Some of these would be admitted to the first year class of the university medical school, but no exemptions of any kind would be granted.

The University of Paris Faculty of Medicine is averse to accepting American students who do not have a bachelor's degree, and since the medical school is too crowded already to justify special exemptions for foreigners, it usually takes several months before a decision can be made on an application from America.

At the German and Austrian Universities the conditions of admission are about the same as in France and Great Britain.

Institute of International Education

The Institute has just published its tenth annual report. It discusses the exchange fellowships, visiting professorships and the work student movement, and gives a tabulation of the number of students from other countries who have been admitted to universities in the United States in recent years. It is interesting to note that the number of students from the Philippine Islands in the scholastic year 1928-1929 was 1,073, or nearly double the number for the year 1921-1922; the number of students from England in American universities increased to 369 from 138. The German students increased during this time from 49 to 360. The French students in this country showed a slight decrease.

Rockefeller Foundation Helps the Sorbonne

The Rockefeller Foundation has given $6,000,000 to rebuild the Sorbonne Medical School, Paris, France, on condition that the French government contribute an equal amount. The buildings of the medical school are said to be small and poorly equipped although some of the most renowned scientists serve there.

Russia Honors Professor Pavlov

On returning recently from a visit to the United States, Prof. Ivan Pavlov was given $50,000 by the Soviet Government of Russia for his physiologic laboratory in Leningrad in commemoration of his eightieth birthday. The government also closed to traffic one of the city's streets so that the noise will not interfere with Professor Pavlov's experimental work.

Rosenwald Fund

The Julius Rosenwald Fund, Chicago, appropriated about $4,000,000 of its capital assets during 1929 for philanthropic purposes. The fund appropriated $250,000 to the University of Chicago Clinics for the medical services; $150,000 to the Massachusetts General Hospital, Boston, toward a pavilion for patients of moderate means; $40,000 to the Committee on the Cost of Medical Care; $250,000 to Howard University, Washington, D. C., for biologic research and additions to the plant; $50,000 for fellowships for advanced study by negroes, chiefly to train physicians, nurses and teachers; $62,500 to the Canadian Mental Hygiene Committee for studies of child growth in Toronto, and appropriations for negro hospitals and colored public health nurses in sixteen counties of five of the Southern states.

Mr. Rosenwald has further given funds to assist in establishing 4,729 schools for negroes in the South, which are spread over fourteen states and 818 counties. Two hundred thousand dollars was appropriated for demonstrations of county library service in the Southern states; $85,000 toward a campaign against illiteracy in Louisiana, and a total of $87,500 to the Social Science Research Council and the new school of social science research in New York.

Another Prize for Scientific Research

An annual prize of $10,000 and a medal has been established by Popular Science Monthly to be awarded beginning this fall under the auspices of the Popular Science Institute to the American citizen who, during the preceding year, has been responsible for the scientific achievement of greatest potential value to the world.

The first prize will be conferred in September by a committee of twenty-four scientists representing institutions throughout the United States, including the Smithsonian Institution, the U. S. Bureau of Standards, the Carnegie Institution, National Research Council, California Institute of Technology, American Museum of Natural History, Massachusetts Institute of Technology, General Electric Company and others.

The only member belonging to the medical profession is Dr. Samuel A. Brown, dean and professor of therapeutics, New York University and Bellevue Hospital Medical College. All scientific workers, professional and amateur, academic and commercial, are eligible for the prize. The award was created to stimulate research especially along practical lines.

Negro Colleges Classified

A classification of negro colleges has been made by a special committee acting under the auspices of the Council on Medical Education and Hospitals of the

American Medical Association. The increase in class I negro premedical schools from five to twenty-five means that there are now twenty additional opportunities for negro premedical education in the United States. The classifications include three types of college as follows: Class I includes those qualified to offer two years of premedical training of first grade order; class II includes fifteen institutions, or an increase of eight, and class III includes a large number which fall short of meeting the requirements and should undergo a complete reorganization to be rated in class I. The classification was made possible through the cooperation of a special committee, consisting of Dr. G. B. Woods, dean, College of Liberal Arts and professor of English, American University, Washington, D. C.; Charles C. McCracken, Ph. D., Ohio State University, Columbus, and Louis R. Wilson, Ph. D., University of North Carolina, Chapel Hill. There are said to be now 3,500 negro physicians and surgeons in the United States, or approximately one colored physician to every 3,343 negroes.

Obstetric Teaching in Georgia

A course in obstetrics was conducted in Thomas County, January 27-31, under the supervision of the state board of health in conjunction with the federal department of labor. Dr. James R. McCord, professor of obstetrics and gynecology, Emory University School of Medicine, Atlanta, gave the lectures, and moving pictures were shown.

A Kentucky State Medical School

The report covering an audit of the state board of health predicts, among other things, that medical courses must be established in some school supported by the state if the shortage of physicians in Kentucky becomes more acute. The report says that there are now probably less than 3,000 physicians in the state. The effect of the shortage is made worse by the fact that a large percentage of the physicians are located in large cities, leaving the rural districts in need of necessary medical aid. The differences existing between standard medical education as defined by the statutes and that defined by the medical schools were pointed out.

Hecksher Institute for Child Health

Announcement has recently been made of the creation of this institute by August Hecksher to be housed in the Hecksher Foundation, New York City. Dr. I. Newton Kugelmass, director of the child research department of the Fifth Avenue Hospital, will be director of the new institute, and will be assisted by a staff of the leading physicians of the city.

The United States Pharmacopoeial Convention

The eleventh decennial convention for the revision of the pharmacopoeia of the United States of America will be held May 13. Eligible organizations and colleges which have not yet done so are urged to send for credential blanks to the secretary of the convention, Lyman F. Kebler, M. D., 1322 Park Road, N. W., Washington, D. C.

The Board of Trustees have asked that credentials be filed by March 14, 1930.

Clinical Bulletins for Practitioners

The University of Colorado School of Medicine and Hospitals, Denver, is issuing a series of bulletins for general practitioners in that state. The first is entitled "Treatment of Neurosyphilis" and was prepared by the psychopathic hospital staff.

Personals

John W. Burke has resigned as professor of ophthalmology at Georgetown University School of Medicine.

James N. Greear, Jr., has been appointed his successor.

William H. Goodrich, dean of the University of Georgia Medical Department, has been elected president of the Georgia and Florida Railroad Surgeons Association.

Ernest W. Goodpasture, professor of pathology, Vanderbilt University School of Medicine, delivered the third Harvey Society Lecture at the New York Academy of Medicine.

Albert P. Mathews, Ph. D., professor of biochemistry, University of Cincinnati School of Medicine, was tendered a testimonial dinner at the Queen City Club, November 26, to celebrate his completion of twenty-five years as a professor of biochemistry.

H. Wingate Todd, professor of anatomy in Western Reserve University School of Medicine delivered the ninth series of Beaumont lectures before the Wayne County Medical Society, Detroit, in January.

J. C. Meakins, professor of medicine in Faculty of Medicine of McGill University, was elected president of the newly chartered Royal Canadian College of Physicians and Surgeons.

Alphonse M. Schwitalla, S. J., dean of the St. Louis University School of Medicine, has been appointed a member of the Committee on the Cost of Medical Care.

John Wyllie, of Glasgow, has been appointed to the new Elliot chair of public health and preventive medicine in Queen's Medical College, Kingston, Canada.

Louis H. Clerf and Edmon Auccin, until recently of Paris, will have charge of the bronchoscopic clinic at Jefferson Medical College hitherto conducted by Chevalier Jackson.

Gabriel Tucker will henceforth have charge of the bronchoscopic clinic at the University of Pennsylvania.

Frederick C. Waite, professor of embryology and histology, was elected president of the Ohio Academy of Science.

James Ewing, professor of pathology in Cornell University Medical College, has been appointed consulting pathologist to the New York State Department of Health.

Sir Norman Walker was recently elected president of the Royal College of Physicians of London.

Walter B. Cannon, George Higginson professor of physiology in the Harvard Medical School, was selected exchange professor at the Sorbonne and the Ecole de Medicine in Paris.

Paul Bartsch, professor of histology in Harvard University School of Medicine, has returned from a trip to the West Indies, made under the auspices of the Walter Rathbone Bacon traveling scholarship.

Alan M. Chesney, dean of Johns Hopkins University School of Medicine, de-

livered the fourth Harvey Society Lecture at the New York Academy of Medicine recently.

Sidney W. Bliss, Ph. D., has been appointed head of the department of biochemistry at Tulane University of Louisiana School of Medicine.

David Riesman, professor of clinical medicine in the University of Pennsylvania, has been elected president of the medical board of the Philadelphia General Hospital.

Herman M. Adler, state criminologist and director of the Juvenile Psychopathic Institute, has accepted a professorship of psychiatry at the University of California, Berkeley, and an appointment as consultant to the California State Department of Institutions.

Edmund V. Cowdry, Ph. D., professor of cytology, Washington University School of Medicine, St. Louis, has been granted leave of absence, in order that he may make a study of parasites in East Africa for the British government.

Joseph F. McCarthy, professor of urology, New York Post Graduate Medical School and Hospital, was made a corresponding member of the Deutsche Gesellschaft für Urologie at its congress in Munich, Sept. 28, 1929.

David Stuart Dodge Jessup has been promoted to assistant professor of clinical pathology at Columbia University.

Milford E. Barnes has assumed his duties as professor and head of the department of hygiene and preventive medicine, State University of Iowa College of Medicine, Iowa City. Dr. Barnes formerly was engaged in public health work in Singapore, the Federated Malay states, and in Siam.

Albert Warren Stearns, commissioner of the state department of correction, addressed the annual meeting of the Massachusetts Society for Mental Hygiene on "Psychiatry in Penal Administration."

Dr. Jefferson H. Clark has resigned as medical director of the clinical laboratories of Temple University School of Medicine, and has been appointed director of the laboratory of the Philadelphia General Hospital.

Deaths

Harold Gifford, emeritus professor of ophthalmology in the University of Nebraska College of Medicine, died recently of acute endocarditis, aged 71.

Albert Vander Veer, formerly dean and professor of surgery in the Albany Medical College, died, aged 88.

Edward N. Libby, professor of medicine in Tufts College Medical School, died of cerebral hemorrhage, aged 61.

Florence M. Holsclaw, associate clinical professor of pediatrics in the University of California Medical School, died, aged 57.

Carl A. Haman, for many years dean of the school of medicine of Western Reserve University, and who resigned from this position in 1928, died in January of heart disease.

Walter T. Bronson, director of the roentgen laboratory of the outpatient department of Northwestern University Medical School, died recently, aged 42.

Clarence F. Haviland, clinical professor of psychiatry in Columbia University College of Physicians and Surgeons, died in Cairo, Egypt, aged 54.

Benjamin Roman, professor of pathology in the University of Buffalo School of Medicine, died, aged 54.

Guy L. Noyes

On February 4, after many months of illness, Dr. Noyes died at Columbus, Missouri. Dr. Noyes was for many years a member of the Executive Council of this Association and in 1927-1928 was vice president. He had been dean of the school of medicine of the University of Missouri since 1912 and a member of its faculty since 1901. He was greatly esteemed by all who knew him because of his splendid character. In appreciation of his work for the university, the University Hospital has been renamed the Noyes Hospital.

Abstracts of Current Literature

Evolution of Premedical Curriculum

The evolution of the premedical curriculum could at present be helped and its process of evolution hastened. This curriculum in many instances apparently assumes that the high school has accomplished the general education process. The premedical student becomes at once devoured by the sciences. He does not devour them. The science of chemistry now has its sway. The number of such courses which this student has to take, not to become a chemical engineer, but a physician, would appear to be beyond all reason. Their mere number for one reason generally breeds poor teaching. The student mechanically memorizes the structural formulae for the amino acids not knowing nor caring what he is doing, or he distills in order to catch the distillate and by the addition of some reagent obtain a precipitate of certain physical characteristics. There is not much reasoning about it. It is a science which must be gained not for purposes of isolated understanding as such or of better understanding something which is to come, but to gain admission to the medical curriculum. Biology, zoology in particular, has had its trouble with chemistry. The physician is to study life, altered and diseased life, yet two courses in zoology against some ten or more in chemistry are not unusual. A knowledge of the life history of insects so they may be found, recognized and exterminated, or courses in general protozoology can rarely find a place. With the addition of physics, one or more modern languages, an incidental course in English, and perhaps psychology, the two or three years premedical curriculum is full to overflowing. It becomes a mechanical feat devoid of intellectual inspiration to fight one's way through a period loaded to the brim with scientific subjects which must be passed in order to enter medicine. This type of curriculum has not the time or content in courses to breed thoughtfulness and character. It concerns itself not with mastering anything, but with getting through with all things in it. This point of view, which is far removed from character, becomes intensified by the student's knowing that he must not only pass these subjects, but his grade, his label, must be of such a height that he can enter a medical school. Such a course of study is not educational in a broad sense or in a specialized sense. It can not breed understanding, judgment or character. It puts a premium on get it quick and get it superficially in order to get the grade that gets to medicine.—W. DEB. MACNIDER, *Southern M. J.*, December, 1929, p. 1054.

Specialism Narrows Outlook of Family Doctor

This artificial division of diseases into specialties may have brought about some little increase in knowledge, but it has not to any great extent been for the benefit of the individual patient, as it has narrowed the outlook of the family doctor, and, to my mind, has had a very serious effect on the teaching of the medical student. It may be argued that in the special department where the clinical material is concentrated the student gets the best opportunities of becoming acquainted with the particular disease, but I hold that he is being taught by a biased individual whose exposition will tend to be lopsided and reveal defective perspective, and the very real difficulty of differential diagnosis will be insufficiently illustrated. In any case these special courses are of short duration and form a small fraction of the

student's total clinical instruction.

These objections are no idle theories, for, to judge from my contact with the final year medical student, this pernicious system is having a very detrimental effect on his outlook, and one cannot wonder at it. Without a Wassermann reaction, a barium meal, an electro-cardiogram, or an x-ray examination of the chest, the modern student seems unable to consider the pros and cons of a case, and cannot even hazard the likely diagnosis. Thus you see that I consider as very ill-advised the attempt to split up general medicine into separate compartments or fields of study. By all means let each of us, as did the late Sir James Mackenzie and Sir Jonathan Hutchinson, choose one type of disease for special and intensive study, but in order that we may retain a sane outlook our survey of the physiological and pathological must be as wide as possible. Even in the academic field we find the same dangers of specialization. We have now in the domain of physiology the elevation of biochemistry into a separate field of study, so that the all-around physiologist is disappearing. In pathology, too, the divorce of histology and bacteriology, with the birth of the misnomer "pathological chemistry," will have a serious effect on our future teachers and students.—L. FINDLAY: *Brit. M. J.*, December 28, 1929, p. 1185.

Professional Education

The rule is that it is only from the date which appears against his name in the *Students Register* that the medical student's career officially begins; thereafter five years at least must pass before he can present himself for the final examination for any diploma which entitles its lawful possessor to registration as a qualified medical practitioner under the Medical Acts; but to meet the circumstances brought about by the dates at which sessions of the medical schools begin and end, the close of the fifth year may be reckoned as occuring at the expiration of fifty-seven months from the date of registration. In any case, the period of five years must be one of bona-fide study; and in every course the following subjects should be included: (i) Elements of General Biology, including an introduction to Embryology. This course, if the licensing bodies permit, may be taken before registration, and the examination may be passed immediately after registration. (ii) Chemistry, Physics, and Biology in their application to Medicine. (iii) Human Anatomy and Physiology, including Histology, Elements of Embryology, Biochemistry and Biophysics. (iv) Elementary Bacteriology, prior to regular clinical appointments. (v) Pathology, general, special, and clinical, and morbid Anatomy. (vi) Pharmacology and Materia Medica, to be taken concurrently with clinical instruction. (vii) Forensic Medicine, Hygiene and Public Health. (viii) Medicine, including Applied Anatomy and Physiology, Clinical Pathology and Therapeutics, Children's Diseases, Acute Infectious Diseases, Tuberculosis, Mental Diseases, Skin Diseases, and Vaccination. (ix) Surgery, including Applied Anatomy and Physiology and Clinical Pathology, Anesthetics, Diseases of the Eye, Ear, Throat and Nose, Radiology, Venereal Diseases and Orthopedics. (x) Midwifery and Diseases of Women, including antenatal conditions and infant hygiene.

The Council recommends that during the last three of the five academic years clinical subjects shall be studied.

The first two years must be passed at a university, or at a school of medicine recognized by any of the licensing bodies enumerated in the schedule to the Medical Act of 1858, and the remainder must be devoted to clinical work at any public hospital or dispensary at home or abroad which is recognized by a licensing body. —*Brit. M. J.*, Aug. 31, 1929.

New Apparatus

The D D E—A New Research Microscope for the Scientist

A notable contribution to aid the work of the research scientist is the newly designed D D E Research Microscope, the latest product of the Bausch & Lomb Optical Company, Rochester, N. Y., in laboratory equipment.

The D D E marks a radical departure from any former type of research and photomicrographic microscope.

Most noticeable of these new ideas in design is the inclined position of the binocular eyepiece which allows the user to sit at the instrument in a natural upright and comfortable position. This is an especially commendable feature for continual observation over protracted periods.

The stand of the D D E microscope also represents an innovation in design, the stage being directly in front of the operator. This "turned about" position offers much greater convenience of manipulation of objects on the stage and of the substage parts.

This new research microscope has been developed by the Bausch & Lomb Engineering Bureau from suggestions first offered by Dr. Lester W. Sharp of Cornell University, with later helpful criticisms submitted by Dr. L. F. Randolph of the U. S. Department of Agriculture and Cornell University.

Since the advent of the binocular body, with its necessary prisms and mechanisms, there has been considerable weight placed upon the delicate fine adjustment mechanism. This weight has been too great to secure the responsive action necessary when working at high magnifications. However, the design of the D D E relieves the adjustment of this extra weight. This will be of special value in photomicrographic work where it is necessary to make long exposures.

The instrument may be equipped with either the regular single objective binocular body tube for visual use and also for drawing with the camera lucida, or with the single tube for photomicrographic work.

For photomicrographic work the microscope is placed in a horizontal position, resting upon three points of support provided on the two arms and base. This leaves each part intact and the stage vertical.

Unusual Features in Mechanical Stage and Substage

The mechanical stage has many points which make for unusual facility in research work. It has forward and back adjustment by rack and pinion and transverse adjustment by multiple screw. These adjustments are operated from the right-hand side of the stage and the stage may be completely rotated with the objective in focus without interference. The specimen may be firmly fixed in position—a very desirable feature in photomicrographic work.

The substage is of the usual form, but combines many excellent features for fine focusing of condensers, dark ground illuminators, etc. A novel feature of the substage is a supplementary condenser on a swing arm. The focus of this condenser is so selected that the field of a 16 or 32 millimeter objective may be entirely filled with light without moving the substage or any of its elements from the usual position for high power objectives. Both high and low powers will function properly without readjustment of the substage condenser.

New Research Lamp Designed

The development of the D D E microscope made it advisable to design a new type of lamp, one particularly adapted to research microscope work. As a result, the No. 1815 Research Lamp has been produced by B & L as a fitting complement to the new D D E microscope.

This new lamp meets two requirements which few designs satisfy; the one of utilizing the full aperture of the microscope condenser (up to N. A. 1.40), and the other of transmitting sufficient light to make possible critical illumination of the specimen under observation. Adjustments and focusing devices are conveniently placed, and the entire lamp is scientifically correct in every detail.

The D D E Research Microscope and the Research Lamp approach the ideal in the field of scientific research instruments, and mark another forward step in the march of optical progress and achievement which has now reached the seventy-seventh year by Bausch & Lomb.

Book Reviews

Minor Surgery

By Frederick Christopher, with a Foreword by Allen B. Kanavel. W. B. Saunders Company, Philadelphia. 1929. Price $8.00.

No one will dispute the fact that minor surgery should have an important place in the curriculum of every medical school; nor that it has not always received adequate recognition in surgical teaching. It is the surgery by which the young practitioner is confronted when he enters on the practice of medicine. It is also the surgery that he can be qualified to do without other teaching or training than that which he received as an undergraduate. It is the surgery which is done usually in the office. How well is the average young graduate prepared to do it?

The author has written this book out of the fullness of personal experience, realizing his shortcomings and with the desire to make easier the road the young medico must travel by stressing the importance of giving him adequate instruction while he is still in school and under the tutelage of trained surgeons.

The story is told well and many excellent illustrations help to clinch the word description. The work is divided into 24 chapters, considering closed and open wounds, foreign bodies, burns, carbuncles and furuncles, injuries, infections, tumors of various parts of the body and minor surgical technic. This last chapter is especially valuable in that it tells the student how to administer local anesthesia, how to do a spinal puncture, how to aspirate, administer hypodermiclysis, incise the tympanic membrane, do a tracheotomy, skin graft, dilate the sphincterani, give a hypodermic injection, transfuse, do a phlebotomy, how to make a plaster cast, how to bandage, etc., etc., things the student hears mentioned often but in the technic of which he is seldom instructed. And how important it is to know how to do all these things. This book will tell him how by means of good descriptions and pictures. It is recommended to all teachers of minor surgery. May their numbers increase and their teaching receive the recognition in the curriculum which it merits.

On Prescribing Physical Treatment

By Matthew B. Ray. William Wood and Company, New York. 1929. Price $3.75.

It is agreed that medical students should be taught something about physical therapy. Many hospitals have spent much money in providing facilities and equipment and personnel for administering such treatment. Medical schools are beginning to realize the necessity of providing some time in the curriculum for teaching physical therapy. This book will serve well as a basis on which to construct a short course, giving all the fundamentals for making use of various physical agents, such as baths of various kinds, heat, packs, electricity, including ionic medication, high frequency currents, diathermy, ultraviolet light and various arc lamps. The book is written from the standpoint of the prescriber, hence is not over-technical. It is strictly practical. Therapeutic indications given make the book especially valuable for the medical student.

The Newer Knowledge of Nutrition

By E. V. McCollum and Nina Simmonds. 4th Ed. The Macmillan Company, New York. 1929. Price $5.00.

The increasing importance of foods in the preservation of health and the treatment of all disease conditions demands greater recognition of this field in the teaching of medical students. The names of the authors, especially the senior author, vouch for the reliability of this book as a text for such teaching. The historical method of presentation is followed and previous editions have been thoroughly revised and brought up to date by the inclusion of recent discoveries concerning the etiology and treatment of anemias, the dietary requirements for blood regeneration; the experience of recent years in the control of goiter; the relation of diet to bone development, the calcification of fractures and the prevention of rickets. The fascinating story of the discovery of the mother substance of Vitamin D—ergosterol, the active principle of cod liver oil, is set forth. The present status of light therapy, through the use of sunlight and the various sources of ultraviolet rays, and the nutritional influences of ultra red rays, are discussed fully. This book is every bit as interesting as a novel. It reads as well and is quite stimulating in its effects on the reader to acquaint himself better with the science of nutrition and its bearing on the treatment of diseases.

A notable and praiseworthy part of the book is the extremely valuable bibliography which contains several thousand references, carefully selected for the purpose of reference reading.

Textbook of Embryology

By Frederick R. Bailey and Adam M. Miller. 5th Ed. William Wood and Co., New York. 1929. Price $7.00.

Good textbooks of embryology—good from the standpoint of teaching medical students—are scarce, but here is one that is written with the purpose of providing a practical, working text. First of all, it is well illustrated. Second, appended to each chapter are suggestions which are intended to furnish the laboratory worker with certain of the more essential practical hints for studying the structures described in the chapter. The development of the germ layers is treated from a comparative standpoint. The chapter on the nervous system gives an insight into the structure and significance of the nervous system that simplifies getting a grasp on this difficult subject.

In the part devoted to organogenesis is given a brief description of certain developmental anomalies which may occur in connection with the organs described. In the chapter on teratogenesis the nature and origin of the more complex anomalies and monsters are discussed. These two chapters bring home forcibly the value of knowing something about embryology. Human embryology is

stressed but comparative embryology is by no means slighted.

The development of various systems and the special sense organs is the basis of division of the subject into chapters.

Teachers of embryology will do well if they will consult this textbook before they outline their course of instruction for medical students.

The Nose, Throat and Ear and Their Diseases

Edited by Chevalier Jackson and George M. Coates, assisted by Chevalier L. Jackson. W. B. Saunders Company, Philadelphia. 1929. Price $13.

Seventy-four specialists, each a leading authority on his subject, have written this book. The result of their combined efforts will, no doubt, please every one interested in this field. For the undergraduate student this book is too large, except as a reference work, but to the practitioner it must be of great value. Anyone bent on research will find references leading as far afield as he may wish to go. It is illustrated profusely and to each chapter is appended an excellent bibliography.

Aids to Orthopedic Surgery

By Eric A. Crook. William Wood and Company, New York. 1929. Price $1.50.

The necessary curtailment of hours assigned to orthopedic surgery in the medical curriculum is an invitation to write an abbreviated text embracing a number of well selected topics which the undergraduate will have time to read. This book is written with that fact in mind. It is not a book for the orthopedic specialist but for the undergraduate medical student who should receive a fundamental instruction in this important field. The text is concise, complete. The book is of a size which permits carrying it in the pocket for ready reference and immediate use.

Diseases of the Chest and the Principles of Physical Diagnosis

By George W. Norris and Henry [illegible] Landis. 4th Ed. W. B. Saunders Company. Philadelphia. 1929. Price $10.

It is recognized today that the most essential part of teaching internal medicine is to lay a firm broad foundation by means of adequate training in physical diagnosis. This can only be acquired by receiving instruction through a good course based on a text presented by men whose clinical and teaching experience entitle them to the designation of "authority." The authors of this book must be regarded as being authorities. Clinical methods are emphasized; laboratory aids are held to be merely corroborative, not diagnostic. That is as it should be. Norris contributes the chapters on examination of the lungs and circulating systems; Landis those on diseases of these systems. Charles M. Montgomery writes on transmission of sounds through the chest, and Edward B. Krumbhaar on the use of the electrocardiograph in heart disease. True, the book is rather bulky—unfortunately a tendency of so many textbooks today—but it is a complete exposition of the subject, hence will not fail to be of great value to the medical student. He will not be amiss if he provides himself with a copy of this book when he enters on the study of physical diagnosis.